III. RESOURCE SPECIFIC ANALYSIS

1. INTRODUCTION

This section discusses the potential environmental impacts of Alternative G. The categories selected are generally consistent with the initial study checklist (Appendix G of the CEQA Guidelines).

This section builds on and is supplemental to the detailed discussion and analysis of the potential environmental impacts of Alternatives A through F that are contained in the 2005 DEIR. Because Alternative G in large measure reflects modifications to Alternate C1, the potential environmental impacts of the modifications that Alternative G makes to Alternative C1 are specifically set out.

2. AESTHETIC RESOURCES

Changes in Management under Alternative G Affecting Aesthetic Resources

Management of JDSF under Alternative G will differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to aesthetic resources. Those changes, in goals and objectives and management direction, are described below.

Changes to DFMP Goals and Objectives

Alternative G makes several changes to the Goals and Objectives under Alternative C1 (the May 2002 DFMP) that further protect or enhance aesthetic resources. These include:

Forest Restoration is moved to Goal #2 and is modified to read:[1]

> Work towards ~~achieving a balanced mix of forest structures and attributes in order to enhance~~ <u>active restoration by managing the Forest to promote and enhance</u> forest health and productivity.

The following Objectives are added to Goal #2 that protect and enhance aesthetics:

> <u>Increase the amount of older forest structure and late seral forest available for terrestrial wildlife, including areas adjacent to aquatic habitats.</u>

[1] Note that <u>underline</u> and ~~strikethrough~~ formatting are used to show the changes that Alternative G makes to the Goals and Objectives that were established for Alternative C1 (2005 DFMP).

Restore conifer forests where early successional hardwoods or invasive plants have become established at densities far above those typical of the mature conifer forests dominated by redwoods, Douglas-fir, Grand fir, and hemlock.

Timber Management is moved from Goal #2 to Goal #4 and modified to read:

> Manage the forest on the sustained yield principle, defined as management which will achieve continuous high yields of timber production that contribute to local employment and tax revenue, consistent with environmental constraints related to watershed, wildlife, fisheries, and aesthetic and recreational enjoyment and constraints related to providing diverse, dynamic matrix of forest habitats and seral stages for researchers.

Goal #5, Recreation and Aesthetic Enjoyment, is modified to reflect additional involvement of recreation user groups:

> Plan for and provide enhanced levels of low impact recreational opportunities that are compatible with forest management objectives and healthy ecological processes, that are consistent with historic recreational use characteristics, and that allow for engagement of recreation user groups.

The following Objectives are added to Goal #5:

Extend existing trails to create a more extensive trail system, including linkages with neighboring State Parks.

Engage various recreation user groups interested in cooperating in the design, implementation, and stewardship of a more extensive recreational facilities system.

Goal #6 Information, Planning, and Staffing is modified to encourage public participation in forest management:

> Develop, maintain, and update management plans and other planning documents and processes ~~and keep them current~~. Manage and support the information needs and staffing needs of all State Forest programs. Communicate with the public regarding management of the Forest.

The following Objectives were added to Goal #6:

> Provide regular information to the local community regarding educational and recreational opportunities on the Forest, as well as research, demonstration, and management activities in general.

Provide opportunities for public and other agency input into planning processes, including any advisory groups that CAL FIRE or the Board may establish.

Changes in DFMP Specific Management Actions

Alternative G is composed of various changes in management features of Alternative C1 and incorporates numerous measures that further protect or enhance aesthetic resources. These include:

Older Forest Structure Zone - Alternative G adds a contiguous Older Forest Structure Zone area of 6,803 acres, extending across the Forest from west to east and north to south (see Map Figure 1). Some of the Forest's most important recreational facilities—trails, campgrounds, old growth groves—are contained within this area. Management of the Older Forest Structure zone for the development and maintenance of older forest structure will provide and their much desired aesthetic qualities.

Late Seral Habitat - The area devoted to development of late-seral forest habitat has been increased by 1,549 acres under Alternative G. Specifically, the area of upper Russian Gulch and lower Big River adjacent to two State Parks has been changed from forms of uneven-aged management to late-seral development, specifically intended to recruit habitat for the marbled murrelet. This represents a significant increase in the level of environmental protection and habitat enhancement for threatened and endangered species commonly associated with older redwood forest and will further protect and enhance aesthetic enjoyment of the forest.

Even-aged Management - Alternative G reduces the potential extent of even-aged management from 29 percent (2002 DFMP Table 6) to not more than 26 percent (see Table II.2, above), as well as the rate at which even-aged management may be conducted. Alternative G also imposes specific restrictions on the amount of clearcutting and other even-aged silvicultural methods that may be applied each decade (see footnote to Table II.2). This change is likely to represent a small to modest increase in environmental protection, due to the fact that even-aged management may produce a greater impact upon both watershed resources and forest vegetation than uneven-aged management. An increase in forms of uneven-aged management will also tend to provide greater connectivity between forested habitats, and a general increase in aesthetic values.

Initial Implementation Period Harvest Limitations - Special harvest limitations have been established, and are expected to remain in place for up to a three-year initial implementation period, while advisory entities consider JDSF management and make recommendations to the Department and the Board for possible modifications of the management plan. The interim harvest standards generally maintain or reduce the level of proposed harvest, when compared to the harvest prescriptions that were designated under Alternative C1. The intent of the interim standards is to avoid changes within individual harvest areas that will preclude future management options. The interim standards limit harvest intensity by setting targets for basal area retention and average

stem size. Post-harvest conifer stocking (basal area) levels will be approximately 70 percent of pre-harvest levels, and average tree size as determined by quadratic mean stem diameter will be approximately equal to or greater than pre-harvest levels. This equates to a relatively light stand thinning or selection harvest. These interim measures will protect and enhance aesthetics during the up to three-year review of the Plan.

Rate of Harvest – The management of JDSF according to the provisions set out in Alternative G is expected to reduce average annual harvest from 31 million board feet per year under Alternative C1 to approximately 20 million board feet per year during the term of the management plan. A reduction in annual harvest may contribute to a reduction in the level of habitat modification and consequent impacts to aesthetics.

Buffers - Additional road and trail will be visually protected by Alternative G, through provision for a buffer, which will improve aesthetics associated with adjacent timber operations (Figure 5). This represents an increase in environmental protection when compared to Alternative C1.

The Late Seral Development areas, Older Forest Structure Zone, and old-growth grove reserves will receive special silvicultural management zone buffers when THPs are adjacent. No even-aged silvicultural systems may be used within 300 feet, and only single tree/cluster selection or thinning may be used within the first 100 feet adjacent to these areas.

Advisory Bodies – Provisions have been established under Alternative G for the utilization of advisory entities to consider the management of the Forest and to advise the Department and the Board concerning the long-term management of JDSF. These entities will likely consider the effects of forest management activities on aesthetics and make recommendations regarding protecting Forest's aesthetic qualities. Recreation user-groups will also be formed to assess and provide input into the diverse recreational opportunities on the Forest.

Mitigations from Alternative C1– Mitigations in the 2005 DEIR that addressed potential impacts to aesthetics by Alternative C1 have been fully incorporated into Alternative G as management measures. These are:

Measure 1 - For even-aged timber harvest plans, conduct field evaluations by a RPF or his or her designee to determine the visibility of the THP area to the Forest visitor as seen from roads, trails, and recreation areas. Evaluations will include, but be not limited to, consideration of the following factors:

- the potential frequency of viewing by the general public,
- the degree and duration of vistas,
- the general topography of the THP area in relation to the view aspect,
- and type and density of forest canopy and understory cover of forest areas surrounding the THP area.

The RPF will make a finding of whether or not the evaluation leads to a conclusion that a significant impact to a scenic vista exists. Where appropriate, to visually soften and mitigate significant impacts created by even-aged management on the integrity of scenic views from designated overlooks visible to significant numbers of general forest visitors, the THP shall include one or a combination of the following: modify the configuration of the harvest area to better reflect topography and natural patch shapes; modify the configuration of the harvest area to avoid spanning ridgelines in whole, or in part; reduce the size of the individual harvests units and/or total harvest area; or leave selected standing trees along the harvest edge boundaries.

Measure 2 - For all timber harvest plans conducted within or adjacent to Special Treatment Areas or buffer areas that are identified but not specifically defined in the DFMP, conduct field evaluations by a qualified RPF or other qualified professional, as determined by CAL FIRE, to determine the visibility of the THP area. Evaluation will consider, but not be limited to:

- the potential frequency of viewing by the general public,
- the degree and duration of views from areas of concern;
- presence of distinctive visual attributes such as rock outcrops, streams, or distinctive flora;
- type and density of forest canopy and understory cover;
- and general topography in relation to the view aspect.

Evaluations should take into account the configuration of the THP in relation to the areas around it. The RPF will make a finding whether or not the evaluation leads to a conclusion that a significant impact to a scenic vista exists. Where appropriate to visually screen views from Special Concern Areas, the Mendocino Woodlands State Park and Outdoor Center, and other state park units adjacent to JDSF, or to direct views to provide desirable vistas, modify the width of the buffer appropriately (wider or narrower). Designate timber harvest practices within buffer areas to be one or a combination of single-tree selection, hazard tree removal, or no harvesting, as appropriate.

To address impacts on the visual character and integrity of the JDSF, no harvesting or some form of restricted timber harvesting within the 23 identified Special Concern Areas. The DFMP also provides for buffers around some Special Concern Areas and other forest resources that would mitigate the impacts of timber management on aesthetic resource. Buffers that are specifically defined in the DFMP are:

- **Campgrounds and day-use areas buffers** - where timber harvesting within 300 feet of campgrounds and day-use areas will be planned and conducted with the designated site use in mind.

- **Road and trail corridors** - specified 300-foot buffers in the DFMP, plus additional corridors to be considered for designation following recreation user survey.

- **Slash abatement zones** - where main access routes to high-use recreation areas; timber harvest plans will have slash abatement within 50 feet of the road.

- **Non-catastrophic tree mortality and down wood retention zones** - within old-growth management areas, WLPZs, or within 100 feet of old-growth groves.

- **Watercourse and Lake Protection Zones** - where a series of management prescriptions are defined to include, but not be limited to: a 25-foot no-harvest zone; an Equipment Exclusion Zone; leaving uncut the 10 largest trees per 330 feet of stream channel within 50 feet of the watercourse transition line; retaining a minimum of 240 sq. ft. of conifer basal area within the WLPZ following harvest activity; reentry no more frequently than every 20 years in Class I WLPZs; and retention of native hardwoods except where species imbalance has occurred.

- **Neighbor/State Park Buffer Special Concern Area** - a 200-*foot zone has been established along all neighboring non-industrial timberland ownerships and State Parks where the silvicultural method has been restricted or scenic values must be considered in selection of an appropriate silvicultural system.*

- A 200-foot harvest exclusion buffer from camp areas, recreational cabins, or main roads located within Mendocino Woodlands State Park. This buffer does not apply to the Railroad Gulch Silvicultural Study area.
- 200-foot buffers have historically been considered around residential properties that are adjacent to the Forest boundary. The type of timber management that has occurred within these buffers has been based on discussions with individual property owners.

Measure 3 - Require the Forest Learning Center and Forest interpretive Center to be located and designed in accordance with the CEQA process to not significantly affect day or nighttime views from campgrounds or residential areas. CEQA processes also shall be followed for any other facilities, not identified at this time, that are proposed at a later date.

Measure 4 (Cumulative Effects): For all timber harvesting plans, the RPF or designee shall conduct field evaluations to determine the visibility of the proposed THP area in combination with the existing viewshed, past, present, and probable future operations, to the Forest visitor as seen from areas of high public use. Evaluations will consider, but not be limited to:

- the potential frequency of viewing by the general public
- the degree of visibility
- duration of view

- general topography of the view area
- character of the forest canopy and understory cover
- visually dominant landscape features
- visual recovery trajectory
- past visual forest management impacts within the viewscape regardless of ownership.

The RPF will make a finding of whether or not the evaluation leads to a conclusion that a significant adverse cumulative impact to a scenic vista exists. This mitigation must be applied to areas including but not limited to all foreground views (views up to 200 feet), to the middleground vistas looking into James Creek from Highway 20 and the surrounding viewscape from the Camp 20 Recreation Area from Highway 20, and any identified background views of JDSF seen from areas of high pubic use. Where appropriate to maintain visual quality and to mitigate cumulative impacts created by forest management on the integrity of scenic views, the THP shall include one or a combination of the following:

- modify the project to reflect the natural character of the landscape
- incorporate edge treatments into the design of the proposed operation (feathered edges, irregular harvest unit design, etc.)
- create islands or patches of trees to mitigate visual impacts under silvicultural methods involving the use of variable retention
- retain stems under an appropriate silvicultural prescription to maintain visual quality
- minimize major visual lines if not in character with the viewed landscape.
- modify the size, shape and configuration to fit the character of the surrounding landscape
- delay harvest until the visible landscape has recovered a forested appearance

Individual Impacts

Impact 1: *Even-aged timber harvests would have a substantial adverse effect on a scenic vista.* (Less than Significant)

Alternative G has a smaller area of the Forest potentially available for even-aged management than does Alternative C1 (12,788 acres vs. 14,256 acres, respectively). It contains the same increased level of review, analysis, and mitigation for aesthetic concerns in planning for individual timber harvest activities and even-aged harvest proposals as C2. These measures are similar to the mitigation for Aesthetic Impact 1 for Alternative C1. Given these changes to the DFMP, Alternative G would have a less than significant impact.

Mitigation: None required.

Impact 2: ***Timber harvests and related activities would substantially degrade the existing visual character or quality of Special Treatment Areas or buffer areas that are identified but not specifically defined in the DFMP*** **(Less than Significant)**

Alternative G provides more provisions than C1 for aesthetic considerations. It contains the same increased level of review, analysis, and mitigation for aesthetic concerns in planning for individual timber harvest activities and even-aged harvest proposals as C2. It provides a 300-foot buffer around the Older Forest Structure Zone where only uneven-aged timber management is allowed. This alternative would have a less than significant impact on the visual character of the site and its surroundings.

Mitigation: None required.

Impact 3: ***Facility development would create a new source of light or glare which would adversely affect day or nighttime views in the area.*** **(Less than Significant)**

Alternative G could lead to the development of more developed recreation facilities, such as campgrounds, than Alternative C1. However, the rustic nature of these facilities would generate only very small amounts of light. Further, any specific new facilities are speculative at this time. Incorporation of Measure 3 into Alternative G, as described for Alternative C1 Mitigation 3 in the December 2005 DEIR, would address potential impacts from development of the Forest Learning Center, Forest Interpretive Center, or any other facilities not identified at this time. Alternative G would have a less than significant impact.

Mitigation: None required.

2.6 Cumulative Impacts

Cumulative Impact 1. ***Timber harvesting, timber sale road construction, and/or Road Management Plan implementation would substantially degrade scenic vistas in a cumulative manner.*** **(Less than Significant)**

Alternative G, with its additional elements of Older Forest Structure Zone, additional Late Seral Forest Development Area, and reduced annual average harvest volume level, would have less potential for significant cumulative impacts on scenic vistas than Alternative C1. However, since Alternative G involves harvesting to some degree, distributed through space and time, and includes the Accelerated Road Management Plan, it has some potential to result in cumulative effects. These potential cumulative impacts of Alternative G would be addressed to less than significance with Measure 4, above, resulting in less than significant impacts.

Mitigation: None required.

Table III.1. Comparison of Aesthetics Impacts by Alternatives.

Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible
Impact 1. Even-aged timber harvests would have a substantial adverse effect on a scenic vista.						
Alt. A			■			With no timber harvesting, the quality of existing scenic vistas will increase over time (beneficial effect). However, there will be a reduction in the number of views over time as vegetation grows in foreground areas and blocks scenic vistas (less than significant adverse effect).
Alt. B				■		The long-term quantity of scenic vistas would increase but the quality of scenic vistas will degrade where even-aged management is seen. Measures proposed in the DFMP, including buffers around Special Concern Areas, plus the additional mitigation specified in this section, would reduce the impact to less than significant levels. Measures proposed in the DFMP would have to be added as mitigations to alternative B.
Alt. C1 May 2002 DFMP				■		
Alt. C2 Nov. 2002 Plan			■			Contains measures equivalent to alternative C1 plus the mitigation developed for C1. No new mitigation is needed to achieve less than significant impacts.
Alt. D			■			With an emphasis on higher levels of aesthetic consideration, greater focus or sole reliance on uneven-aged management, and Recreation Corridors, these alternatives would have a less than significant impact on scenic vistas throughout the JDSF
Alt. E			■			
Alt. F			■			
Alt. G			■			The establishment of the OFSZ, increased late-seral habitat and increased level of review, analysis, and mitigation for aesthetic concerns in planning for individual timber harvest plans will result in the impacts to scenic vistas being less than significant.

Table III.1. Comparison of Aesthetics Impacts by Alternatives.

Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible
Impact 2. Timber harvests and related activities would substantially degrade the existing visual character or quality of Special Treatment Areas or buffer areas that are identified but not specifically defined in the DFMP.						
Alt. A	■					With no timber harvesting, the visual character of the Forest at the site level will improve steadily over time.
Alt. B				■		This alternative's relatively greater reliance on even-aged prescriptions and limited consideration for development of late seral conditions poses a higher potential for degradation of visual character or quality. These impacts could be mitigated using the Special Concern Area approach used in C1, plus Mitigation 2. Alternatively, mitigations would be developed and applied at the individual THP level following standard FPR considerations.
Alt. C1 May 2002 DFMP				■		Alternative provides many protections for visual quality at this scale, including Special Concern areas and other protections. Mitigation 2 provides additional analysis of aesthetic protection needs at the project level.
Alt. C2 Nov. 2002 Plan			■			These alternatives would result in some beneficial long-term effects associated with increased late seral, mixed-age, and hardwood management to varying degrees (with alternatives D, E, F, and G superior to alternative C2). All alternatives would also result in short-term visual impacts since all involve timber harvest to varying degrees, and all would require protections with buffers and corridor as specified for each of these alternatives. Alternative G specifically includes measures to protect visual quality in Special Treatment Areas and buffer areas.
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			

Table III.1. Comparison of Aesthetics Impacts by Alternatives.

Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible
Impact 3. Facility development would create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.						
Alt. A						No development would be included that would cause light or glare which would adversely affect day or nighttime views in the area.
Alt. B						No specific new facilities are proposed; however, a need for new facilities could be identified. No specific provisions provided for addressing potential impacts. Impacts could be addressed through application of Mitigation 3.
Alt. C1 May 2002 DFMP						Construction of the Forest Learning Center and Forest Interpretive Center or other new facilities could involve significant lighting and change the quality of the night skies if located near campgrounds or residences unless mitigated as specified in Mitigation 3.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						The direct incorporation of Measure 3 into Alternative G results in impacts from new facilities being less than significant.

Table III.1. Comparison of Aesthetics Impacts by Alternatives.

Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible
Cumulative Impact 1. Timber harvesting, timber sale road construction, and/or Road Management Plan implementation would substantially degrade scenic vistas in a cumulative manner.						
Alt. A						With no timber harvesting, the quality of existing scenic vistas will increase over time (beneficial effect). However, there will be a reduction in the number of views over time as vegetation grows in foreground areas and blocks scenic vistas (insignificant adverse effect).
Alt. B						This alternative's relatively greater reliance on even-aged prescriptions and limited consideration for development of late seral conditions poses a higher potential for degradation of visual character or quality. Mitigations would be developed and applied at the individual THP level following standard FPR considerations for cumulative impacts to aesthetic resources. Alternatively, Mitigation 4 could be applied to address potential cumulative impacts.
Alt. C1 May 2002 DFMP						These alternatives would result in some beneficial long-term effects associated with increased late seral, mixed-age, reduced use of evenaged management, and hardwood management to varying degrees (with Alternatives D, E, F, and G superior to Alternatives C1 and C2). All alternatives would also result in short-term visual impacts since all involve timber harvest to varying degrees and include the Road Management Plan. All would require mitigation as specified in this section. .
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						The direct incorporation of Measure 4 into Alternative G would result in cumulative impacts to scenic vistas being less than significant

3. AGRICULTURE RESOURCES

Changes in Management under Alternative G Affecting Agricultural Resources

Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to agricultural resources.

Individual Impacts

Impact 1: *Convert prime farmland, unique farmland, or farmland of Statewide Importance.* (No Impact)

JDSF is not located in an area designated as Prime Farmland, Unique Farmland, or a Farmland of Statewide Importance. Neither Alternative G nor any of the other alternatives will convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.

Mitigation: None required.

Impact 2: *Conflict with existing zoning for agricultural use, or a Williamson Act contract.* (No Impact)

Neither the Alternative G nor any of the other alternatives, except Alternative A, will conflict with existing zoning for agricultural use, or a Williamson Act contract. The Mendocino County General Plan land use designation for the parcel is Forest Lands and the zoning is TPZ. Since no timber harvesting will occur under Alternative A, the full intent of TPZ zoning will not be met, though timber growth will continue to occur and this growth could potentially be captured in the future.

Mitigation: None required

Impact 3: *Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland, to non-agricultural use.* (No Impact)

Neither Alternative G nor any of the other alternatives will involve other changes in the existing environment, which, due their location or nature, could result in conversion of Farmland, to non-agricultural use.

Mitigation: None required

Table III.2. Comparison of Agriculture Impacts by Alternatives.

Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible
Impact 1. Convert prime farmland, unique farmland, or farmland of Statewide Importance.						
Alt. A						None of the alternatives will convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 2. Conflict with existing zoning for agricultural use, or a Williamson Act contract.						
Alt. A						Since there is no timber harvest under this alternative, the timber harvest intent of TPZ zoning will not be met, though timber growth will continue and could potentially get captured through future harvest.
Alt. B						Alternatives B through G will not conflict with existing TPZ zoning.
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

Table III.2. Comparison of Agriculture Impacts by Alternatives.

Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible
Impact 3. Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland, to non-agricultural use.						
Alt. A						None of the alternatives will involve other changes in the existing environment, which, due their location or nature, could result in conversion of Farmland, to non-agricultural use.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

4. MINERAL RESOURCES

Changes in Management under Alternative G Affecting Mineral Resources

Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to mineral resources.

Individual Impacts

Impact 1: *Result In The Loss Of A Known Valuable Mineral Resource.* (No Impact)

As discussed in the 2005 DEIR, no known commercially valuable mineral resources exist within JDSF. Neither the Alternative G nor any of the other alternatives will result in the loss of a valuable commercial mineral resource through either individual or cumulative impacts.

Mitigation: None required.

Impact 2: *Result In The Loss Of Availability Of A Locally Important Mineral Resource Identified In An Approved Land Use Plan*. (No Impact)

Neither Alternative G nor any of the other alternatives will result in the loss of availability of a locally important mineral resource as identified in the General Plan through either individual or cumulative impacts.

Mitigation: None required.

Table III.3. Comparison of Mineral Resources Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1. Result in the loss of a known valuable mineral resource						
Alt. A						None of the alternatives will result in the loss of a known valuable mineral through either individual or cumulative impacts.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 2. Result in the loss of availability of a locally important mineral resource identified in an approved land use plan.						
Alt. A						None of the alternatives will result in the loss of availability of a locally important mineral resource identified in an approved land use plan through either individual or cumulative impacts.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

5. AIR QUALITY

Changes in Management under Alternative G Affecting Air Quality

Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to air quality.

Project Individual and Cumulative Impacts

Impact 1: *Violate or substantially contribute to a violation of the ambient air quality standards.* (Less than Significant)

For this impact area, alternatives D through G are distinguished from alternative C1 primarily by their lower levels of timber harvest activities. This difference would result in lower levels of PM10 generation from harvesting equipment than for C1. These alternatives would have a less than significant impact on ambient air quality. No mitigation is required.

Mitigation: None required.

Impact 2: *Conflict with or obstruct implementation of the applicable air quality plan*. (No Impact)

The Mendocino County Air Quality Management District (MCAQMD) is the regional agency responsible for overseeing and regulating air quality in Mendocino. The MCAQMD has developed and implemented rules and regulations that address PM10, as well as NOx, SO_2, VOCs, ozone, and air toxics. The rules and regulations of the MCAQMD have been incorporated into the State's overall State Implementation Plan (SIP). Emissions from activities associated with the proposed management of the JDSF, under any of the Alternatives A-G, would be consistent with activities allowed under the MCAQMD rules and regulations and would be conducted in compliance with applicable regulations (e.g., fugitive dust and open burning). Thus, Alternative G would not conflict with the State and local air quality planning requirements. No mitigation is required. This finding applies to all of the EIR alternatives.

Mitigation: None required.

Cumulative Impact 3: *Results in a cumulatively considerable net increase in emissions of any criteria pollutant for which the project region is non-attainment.* (Less than Significant)

Based on the factors discussed therein, the December 2005 DEIR found that the Alternative C1 (the proposed project) would have a less than significant impact.

Alternative G would result in about one-third less annual timber harvesting than Alternative C1, resulting in less total pollutant emissions over time and space. Thus, Alternative G would have a less-than-significant cumulative impact.

Mitigation: None required.

Impact 4: *Result in the release or significant exposure of public to air toxics.* (Less than Significant)

The management activities proposed for JDFS will not result in a significant release of or a significant exposure of the public to air toxics. Asbestos from asbestos-bearing soils or rocks will not be released to the air because such rocks and soils are not found on JDSF. Estimates presented in the 2005 DEIR indicate diesel engine PM10 production of approximately 14 tons per year due to JDSF management under Alternative C1, would be well below the 80-ton-per-year control threshold established by the MCAQMD. Based on this analysis a reasonable conclusion was made in the 2005 DEIR that timber operations on JDSF would not result in significant release of or exposure to diesel PM10 emissions.

Alternative A also would have a less-than-significant level of impact, given its minimal level of management activity, including soil-disturbing activity and lack of timber-harvest-associated machinery use. Alternatives B, C2, and D through G also would result in a less than significant impact for the same reasons as Alternative C1.

Mitigation: None required.

Table III.4. Comparison of Air Quality Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1. Violate or substantially contribute to a violation of the ambient air quality standards						
Alt. A						Alternative A would reduce air emissions overall by reducing harvest-related traffic and equipment use, and eliminating prescribed burning. Impacts would remain, however, due to continued recreational traffic on existing roads, lack of a road management plan, and an increased risk of severe wildfires in the absence of active fire suppression measures.
Alt. B						Alternative B would maintain emissions at historic levels associated with the 1983 land. These levels do not contribute significantly to violations in air quality standards. Alternative B would not be significantly different from alternative C1 in its overall level of air pollutant generating activity related to timber harvest, except for having a lower level of road improvement (i.e., no Road Management Plan) and thus not achieving the associated long-term reduction in PM10 generation.
Alt. C1 May 2002 DFMP						There is no substantial difference among Alternatives C1, C2, D, E, F, and G. All would result in reduced air quality impacts due to an active Road Management Plan when compared to Alternatives A or B. Less than significant impacts, however, would still occur due to continued road use, recreation, and timber harvest activities.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 2. Conflicts or obstructs implementation of the applicable air quality plan						
Alt. A						No alternative directly conflicts with or obstructs implementation of any air quality plan.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

Table III.4. Comparison of Air Quality Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Cumulative Impact 3. Results in a cumulatively considerable net increase in PM10 emissions.						
Alt. A			■			Alternative A would reduce PM10 emissions overall by reducing harvest-related dust and burning. Impacts would remain, however, due to continued recreational traffic on existing roads, lack of a Road Management Plan, and an increased risk of severe wildfires in the absence of active fire prevention measures.
Alt. B			■			Alternative B would maintain emissions at historic levels as monitored by the Air District. For Alternative B there is no specific Road Management Plan. Roads are constructed and maintained as needed to support operations. As discussed above, PM10 emissions also result from slash burning.
Alt. C1 May 2002 DFMP			■			Compared to Alternative B, there would potentially be an increase in slash burning for Alternatives C1 and C2. However, assuming that the degree of slash burning is proportional to the volume of timber harvested, this increase would be minimal, only about 7 percent. The resulting increase in PM10 emissions from slash burning would be more than offset by the decrease in PM10 emissions due to implementation of the Road Management Plan. The Road Management Plan in Alternatives C1, C2, D, E, F, and G would potentially reduce the number of traveled roads, increase maintenance of existing and new roads, surface existing and new roads intended for year-round log hauling and recreation, and implement a dust control program for roads.
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			
Impact 4. Result in the release or significant exposure of public to air toxics.						
Alt. A		■				Under this alternative, there would be minimal operation of diesel-powered equipment and associated amounts of diesel PM10.
Alt. B			■			There is no significant difference among alternatives B-G. All would have moderate levels of operation of diesel-powered equipment for road and timber management activities, releasing amounts of diesel PM10 below the MCAQMD threshold of concern.
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			

6. BIOLOGICAL RESOURCES

6.1 Changes in Management under Alternative G Affecting Biological Resources

Management of JDSF under Alternative G will differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to biological resources. The changes in goals, objectives and management direction between Alternatives C1 and G are described below.

Changes to DFMP Goals and Objectives

Alternative G makes several changes to the Goals and Objectives for Alternative C1. These changes further protect or enhance biological resources and include:

Forest Restoration is moved to Goal #2 and is modified to read:

Goal #2 – *[Goal # 4 in May 2002 DFMP]* FOREST RESTORATION: Work towards ~~achieving a balanced mix of forest structures and attributes in order to enhance~~ active restoration by managing the Forest to promote and enhance forest health and productivity.

The following Objectives are added to Goal #2 that protect and enhance biological resources:

Increase the amount of older forest structure and late seral forest available for terrestrial wildlife, including areas adjacent to aquatic habitats.

Improve habitat connectivity and reduce forest fragmentation, including the concepts of corridors and contiguous habitat.

Use a range of management techniques to compare natural and accelerated forest restoration approaches while maintaining high canopy cover across the Older Forest Structure Zone (OFSZ) and other areas designated for development of late seral forest characteristics.

Cooperate with other agencies and private conservation organizations interested in forest restoration on research into approaches to increase the pace at which older forest structure characteristics can be developed through active management.

Focus on restoring more productive river and stream systems from the low gradient floodplains to intermittent streams in the upper reaches to improve the habitat conditions and populations of salmonids, other fish species, amphibians, and other plants and animals dependent on riparian ecosystems.

Work with neighboring landowners, including State Parks and the Conservation Fund, to explore opportunities for multiple-landowner, landscape-level approaches to forest restoration, including the protection and enhancement of watershed and ecological processes.

> Restore conifer forests where early successional hardwoods or invasive plants have become established at densities far above those typical of the mature conifer forests dominated by redwoods, Douglas-fir, Grand fir, and hemlock.

The following Objective was added to Goal #3 to protect and enhance biological resources:

> Work with partners to conduct research and demonstration on the effectiveness of measures to protect watershed and ecological processes from potential management impacts.

Goal #6 - Information, Planning and Staffing is modified to read:

> **Goal #6 – INFORMATION, ~~&~~ PLANNING, & STAFFING**: Develop, maintain, and update management plans and other planning documents and processes ~~and keep them current~~. Manage and support the information needs and staffing needs of all State Forest programs. Communicate with the public regarding management of the Forest.

The following Objective was added to Goal #6 to protect and enhance biological resources:

> Provide opportunities for public and other agency input into planning processes, including any advisory groups that CAL FIRE or the Board may establish.

Changes in Specific Management Actions under Alternative G

Alternative G adopts various changes in management and incorporated numerous mitigation measures, as compared to Alternative C1, that further protect or enhance biological resources. These include:

Older Forest Structure Zone - Alternative G adds a contiguous Older Forest Structure Zone area of 6,803 acres, extending across the Forest from west to east and north to south (see Map Figure 1). Some of the Forest's most important recreational facilities—trails, campgrounds, old growth groves, are contained within this area. Management of the Older Forest Structure zone for the development and maintenance of older forest structure will provide enhanced protection of biological resources.

Late Seral Habitat - The area devoted to development of late-seral forest habitat has been increased by 1,549 acres under Alternative G. Specifically, the area of upper Russian Gulch and lower Big River adjacent to two State Parks has been changed from forms of uneven-aged management to late-seral development, specifically intended to recruit habitat for the marbled murrelet. This represents a significant increase in the

level of environmental protection and habitat enhancement for threatened and endangered species commonly associated with older redwood.

Even-aged Management - Alternative G reduces the potential extent of even-aged management from 29 percent (2002 DFMP Table 6) to not more 26 percent (Table II.2, above), as well as the rate at which even-aged management may be conducted. Alternative G also imposes specific restrictions on the amount of clearcutting and other even-aged silvicultural methods that may be applied each decade (see footnote to Table II.2). This change is likely to represent a small to modest increase in environmental protection, due to the fact that even-aged management may produce a greater impact upon both watershed resources and forest vegetation than uneven-aged management. An increase in forms of uneven-aged management will also tend to provide greater connectivity between forested habitats and a general increase in protection for species dependent on continuous forest cover.

Initial Implementation Period Harvest Limitations - Special harvest limitations have been established, and are expected to remain in place for up to a three-year initial implementation period, while advisory entities consider JDSF management and make recommendations to the Department and the Board for possible modifications of the management plan. The interim harvest standards generally maintain or reduce the level of proposed harvest, when compared to the harvest prescriptions that were designated under Alternative C1. The intent of the interim standards is to avoid changes within individual harvest areas that will preclude future management options. The interim standards limit harvest intensity by setting targets for basal area retention and average stem size. Post-harvest conifer stocking (basal area) levels will be approximately 70 percent of pre-harvest levels, and average tree size as determined by quadratic mean stem diameter will be approximately equal to or greater than pre-harvest levels. This equates to a relatively light stand thinning or selection harvest. These interim measures will protect and enhance aesthetics during the up to three-year review of the Plan.

Rate of Harvest – The management of JDSF according to the provisions set out in Alternative G is expected to reduce average annual harvest from 31 million board feet per year under Alternative C1 to approximately 20 million board feet per year during the term of the management plan. A reduction in annual harvest may contribute to a reduction in the level of habitat modification and consequent impacts to biological resources.

Buffers - The Late Seral Development areas, Older Forest Structure Zone, and old-growth grove reserves will receive special silvicultural management zone buffers when THPs are adjacent. No even-aged silvicultural systems may be used within 300 feet, and only single tree/cluster selection or thinning may be used within the first 100 feet adjacent to these areas. The buffers proposed under Alternative G will provide for enhanced protection of biological resources within these management zones as compared with management proposed under Alternative C1.

Advisory Bodies – Provisions have been established under Alternative G for the utilization of advisory entities to consider the management of the Forest and to advise the Department and the Board concerning the long-term management of JDSF. These entities will likely consider the effects of forest management activities on sensitive biological resources and make recommendations on demonstrations and on future management that enhances and protects those resources.

Mitigation for Alternative C1 from the 2005 DEIR – Mitigation developed for Alternative C1 (2002 DFMP) in the 2005 DEIR that addressed impacts to biological resources, specifically snag dependent species, has been fully incorporated into Alternative G as a management measure. This measure is:

> Retain all snags within all timber harvest areas with the exception of snags that pose a fire or safety hazard, or are within the alignment of roads proposed for construction. The largest snags, including residual old-growth snags, should have priority for protection until the snag retention goals of the DFMP are met.

6.2 Aquatic Resources

Section 6.1 identified a number of changes that Alternative G makes to Alternative C1 that will generally contribute to a reduction in potential impacts to aquatic resources. These occur primarily through the reduction in the amount and intensity of harvesting activity (i.e., less timber harvest per year, less use of even-aged management, increased use of low intensity late seral forest and older forest management prescriptions).

Alternative G provides for three riparian restoration demonstration areas. These areas are intended to provide opportunities for JDSF to collaborate with other agencies (DFG, Regional Water Quality Control Board, U.S. Fish and Wildlife Service, e.g.) to test and evaluate different riparian restoration and protection approaches. Over the longer term, the information that is learned through these projects should help to better protect and restore aquatic resources, including both habitat and populations.

Individual Impacts

Impact 1: *Will the project have substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species?* (Impacts range from Less than Significant to Beneficial)

As with the other alternatives, Alternative G is not expected to have significant direct effects on aquatic species. Significant adverse effects, if any, would most likely occur through indirect means as described below. Also, a number of positive impacts to aquatic species are identified.

1a. *Increases in Water Temperature*. (Beneficial)

Alternative G will provide riparian protection that is equal to Alternative C1 and thus, decreasing water temperatures can be expected, as assessed in the 2005 DEIR. Decreasing water temperatures will be a beneficial impact of Alternative G.

Mitigation: None required.

1b. *Increases in Sedimentation*. (Less than Significant)

Increased buffers, reductions in even-aged management and level of harvest, as well as further harvesting restrictions during the initial implementation period, proposed under Alternative G will result in slightly lower rates of sedimentation than under Alternative C1. Sediment impacts under Alternative G will be less than significant.

Mitigation: None required.

1c. *Reduction in LWD Recruitment*. (Beneficial)

Alternative G provides for WLPZ widths that are similar to those proposed under Alternative C1, and also includes the management measure for large woody debris survey, recruitment, and placement. There is no expected change in LWD recruitment to streams under Alternative G, as compared to Alternative C1. Alternative G would result in a beneficial impact if increased LWD.

Mitigation: None required.

1d. *Alteration of Flow Patterns.* (No Impact)

Management of JDSF under Alternative G will require implementation of the Accelerated Road Management Plan as proposed under Alternative C1, thus reducing and eventually eliminating alterations in flow patterns associated with road crossings. A reduction in timber harvesting and evenaged management under Alternative G will further reduce the potential for diversions to occur as compared with alternative C1. Alternative G will have not impact on flow patterns.

Mitigation: None required.

1e. *Channel Geomorphology*. (Less than Significant)

Alternative G proposes reduced rates of harvest, additional initial implementation period harvest limitations, reduced evenaged management as well as increases in late seral

habitat as compared with Alternative C1. The addition of these measures, along with those already proposed under Alternative C1, will further ensure impacts to channel geomorphology will be less than significant under Alternative G.

Mitigation: None required.

2. *Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?* (No Impact)

Implementation of the Accelerated Road Management Plan under Alternative G, as under Alternative C1, will increase the rate at which barriers to fish migration and rearing habitat are identified and corrected. Alternative G will have no impact.

Mitigation: None required.

3. *Potential to have a substantial adverse effect on any riparian habitat?* (Impacts range from Less than Significant to Beneficial)

As with Alternative C1, Alternative G is unlikely to have any significant negative effects on riparian habitat or functions. These individual functions are discussed below.

3a. *Riparian forest extent and quality.* (Beneficial)

Alternative G would provide similar protection to riparian habitat as under Alternative C1, ensuring continued beneficial effects for riparian forest extent and quality.

Mitigation: None required.

3b. *Allochthonous Inputs*. (Less than Significant)

Riparian management will not differ significantly under Alternative G as compared to Alternative C1. The 2005 DEIR found that Alternatives C1 would provide for the retention of sufficient overstory to ensure continuance of allochthonous inputs to watercourses. Thus, Alternative G would have a less than significant impact.

Mitigation: None required.

3c. *Instream habitat and streambank stability.* (Beneficial)

Alternative G, as with Alternative C1, ensures a continuance of high canopy densities over watercourses, providing streambank stability and increasing LWD availability providing instream habitat. Alternative G would have a beneficial impact.

Mitigation: None required.

4. *Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or State habitat conservation plan related aquatic resources?* (No Impact)

As with the other alternatives, Alternative G will not conflict with any HCPs in the area. It will have no impact.

Mitigation: None required.

5. *Cause a fish or amphibian population to drop below self-sustaining levels or threaten to eliminate an aquatic community within the assessment area?* (Beneficial)

The provisions of Alternative C1, including the Accelerated Road Management Plan and the LWD survey, recruitment, and placement measure, along with the changes in management proposed under Alternative G, including reduced harvest rates, initial implementation harvest limitations, and less evenaged management, will result in beneficial effects for aquatic and riparian species under Alternative G.

Mitigation: None required.

6. *Reduce the number or restrict the range of a rare or endangered aquatic plant or animal?* (Beneficial)

The 2005 DEIR found that Alternative C1 would have beneficial effects on threatened and endangered salmonids. Alternative G, with additional factors potentially beneficial to salmonids and instream habitat conditions, including reduced harvest rates, initial implementation harvest limitations, and less evenaged management, also would have a beneficial impact.

Mitigation: None required.

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
1. Will the project have substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species?						
1a. Water Temperature						
Alt. A						No-harvest management would result in no canopy cover removal along watercourses, allowing canopy cover to increase over time and temperature regimes to return to background levels. This alternative does not provide for restoration work in WLPZs where conifers need to be reestablished, resulting in a slower rate of recovery than might otherwise be achieved
Alt. B						Most watercourses met canopy target criteria under old FPRs. New FPR retention standards for Threatened and Impaired Watersheds increase canopy cover and would not result in significantly higher water temperatures.
Alt. C1 May 2002 DFMP						Most watercourses met target criteria under old FPRs. New FPR and DFMP retention standards and late successional development emphasis in WLPZs should increase stream shading over time, resulting in lower water temperatures in some streams segments and at least maintaining current temperature regimes in others.
Alt. C2 Nov. 2002 Plan						
Alt. D						FEMAT-style stream buffer retention standards will increase stream shading over time, resulting in lower water temperatures in some streams segments and at least maintaining current temperature regimes in others. Protection zones managed for late seral forest. Goal is the rapid return of riparian management zones to historical, natural ecologic functions.
Alt. E						Most Class I watercourse zones and adjacent areas managed for late seral conditions. FEMAT-style stream buffer retention standards for Class II and III streams, with management for late seral conditions. Protection standards will increase stream shading over time, resulting in lower water temperatures in some streams segments and at least maintaining current temperature regimes in others.
Alt. F						Applies NOAA Fisheries short-term HCP guidelines, resulting in wide watercourse buffers and increasing stream shading over time, leading to lower water temperatures in some streams segments and at least maintaining current temperature regimes in others. Watercourse protection zones managed for late seral forest.
Alt. G						Management similar to Alternative C1 with similar beneficial effects over time.

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
1b. Sedimentation						
Alt. A						Road maintenance would be limited to that necessary to maintain public access. No directed road upgrade or abandonment program. Sediment delivery may increase from the unmaintained road system. Potential road sediment problems could be mitigated through application of a Road Management Plan. No timber harvest eliminates potential for sediment from harvesting operations. Potential hillslope sediment sources could be mitigated through application of Hillslope Management Guidelines provided in DFMP.
Alt. B						Standard Forest Practice Rules to prevent and reduce sedimentation apply. Three-year road maintenance requirement without directed upgrade and abandonment plan may not be sufficient to reduce sediment delivery to less than significant levels. Potential road sediment problems could be mitigated through application of a Road Management Plan. Potential hillslope sediment sources could be mitigated through application of Hillslope Management Guidelines provided in DFMP.
Alt. C1 May 2002 DFMP						Alternatives C1 and C2 have an Accelerated Road Management Plan element to address road-related sediment over time. These alternatives have EEZs, as well as CEG involvement in THP preparation, which also should contribute to decreased sediment delivery potential. Potential hillslope sediment sources are addressed through application of Hillslope Management Guidelines provided in DFMP.
Alt. C2 Nov. 2002 Plan						
Alt. D						Alternatives D, E, and F have expanded watercourse protections for all watercourse classes with limited or no-harvest restrictions. Class III/headwater protections with Riparian or Aquatic Management Zones. Road Management Plan will reduce road-related sediment over time. Decreased levels of harvesting activity contribute to a reduction in the potential for sediment generation. Potential hillslope sediment sources are addressed through application of Hillslope Management Guidelines provided in DFMP.
Alt. E						
Alt. F						
Alt. G						Reductions in evenaged management and level of harvest as well as reduced initial implementation period harvest levels proposed for the short term will result in slight reductions in sedimentation over Alternatives C1 and C2.

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
1c. LWD Recruitment						
Alt. A						No harvest would allow full development LWD recruitment potential, except where conifer restoration needed.
Alt. B						Recent FPR retention standards are designed to protect LWD recruitment potential on a THP-by-THP basis. Additional mitigation such as the Large Woody Debris Survey, Recruitment, and Placement management measure is necessary to ensure adequate LWD recruitment. This mitigation would result in beneficial effects over time.
Alt. C1 May 2002 DFMP						New FPR and DFMP retention standards and late successional development emphasis in WLPZs, combined with the Large Woody Debris Survey, Recruitment, and Placement management measure should have a beneficial effect on LWD supply.
Alt. C2 Nov. 2002 Plan						
Alt. D						FEMAT or NOAA Fisheries style WLPZ retention and late successional management standards under Alternatives D, E, and F should increase potential for recruitment with broader riparian management zone, harvesting restrictions, and emphasis on late seral development.
Alt. E						
Alt. F						
Alt. G						Management similar to Alternative C1 with similar beneficial effects over time.
1d. Alteration of Flow Patterns						
Alt. A						No directed road maintenance, upgrade, or abandonment program could result in diverted flow as crossings are obstructed. Potential impacts could be mitigated though the adoption of a Road Management Plan.
Alt. B						Standard Forest Practice Rules apply to timber management and appurtenant roads. No directed road maintenance beyond three years post-THP completion could result in diverted flow as crossings are obstructed. These impacts could be mitigated with a Road Management Plan.
Alt. C1 May 2002 DFMP						Alternatives C1 through G all have Road Management Plans that should reduce and eventually eliminate diversion potential at road crossings.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
1e. Channel Geomorphology						
Alt. A						Increased sediment delivery from non-maintained roads could fill pools and gravel interstices and reduce channel volume. Potential impacts could be mitigated though the adoption of a Road Management Program.
Alt. B						Standard Forest Practice Rules apply. Increased sediment delivery from roads that are not upgraded or abandoned could fill pools and gravel interstices and reduce channel volume. Potential road sediment impacts could be mitigated though the adoption of a Road Management Program. Potential hillslope sediment impacts could be mitigated through the Hillslope Management Guidelines developed in the DFMP. Mitigation such as the Large Woody Debris Survey, Recruitment, and Placement management measure is needed to ensure adequate instream LWD to address channel geomorphology processes.
Alt. C1 May 2002 DFMP						Enhanced riparian zone protections, Road Management Plan, Hillslope Management Guidelines, and use of CEG on THPs should reduce sediment delivery below current conditions and not result in further degradation of channel geomorphology. The Large Woody Debris Survey, Recruitment, and Placement management measure would ensure adequate instream LWD to address channel geomorphology processes.
Alt. C2 Nov. 2002 Plan						
Alt. D						Enhanced riparian zone protections, Road Management Plan, Hillslope Management Guidelines, and use of CEG on THPs should recruit adequate LWD and reduce sediment delivery below current conditions and not result in further degradation of channel geomorphology.
Alt. E						
Alt. F						
Alt. G						Reduced rates of harvest, initial implementation period harvest limitations, reduced evenaged management as well as increases in late seral habitat along with the provisions of Alternative C1 will further reduce the potential for degradation of channel geomorphology.

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
2. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?						
Alt. A				■		Increased sediment delivery from non-maintained roads could fill pools and gravel interstices and reduce egg incubation and rearing habitat quality. Road crossing failures on Class I streams could impede anadromous and resident migration and increase sedimentation-associated impacts. Potential impacts could be mitigated through application of a Road Management Plan.
Alt. B				■		Standard Forest Practice Rules apply to timber management activities. Increased sediment delivery from roads that are not maintained or not upgraded could fill pools and gravel interstices and reduce egg incubation and rearing habitat quality. Road crossing failures on Class I streams could impede anadromous and resident migration. Potential impacts could be mitigated through application of a Road Management Plan.
Alt. C1 May 2002 DFMP	■					Alternatives C1 through G include the Road Management Plan that will inventory and correct migration barriers along the road system. This will improve access to spawning areas and downstream migration and will further reduce sediment-associated impacts.
Alt. C2 Nov. 2002 Plan	■					
Alt. D	■					
Alt. E	■					
Alt. F	■					
Alt. G	■					

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
3. Have a substantial adverse effect on any riparian habitat? (Alternative impacts on riparian vegetation's role in water temperature and LWD inputs identified above.)						
3a. Riparian Forest Extent and Quality						
Alt. A		■				The no harvest component will maintain all trees along the streambank. Opportunity to enhance rate at which late seral forest conditions are achieved is not available.
Alt. B			■			FPRs currently provide for substantial riparian forest retention for Class I and II watercourses, protection measures and buffer considerations for Class III stream.
Alt. C1 May 2002 DFMP	■					These alternatives require a 25-foot no-cut/limited entry for habitat improvement WLPZ for Class I and Class II watercourses, which would protect streambank stability. Also require management of WLPZs for late seral forest conditions. These measures will protect riparian forest extent; they also will enhance riparian forest condition and ecological function.
Alt. C2 Nov. 2002 Plan	■					
Alt. D	■					FEMAT-style WLPZ retention measures and late-successional management requirements will protect and enhance riparian forest condition, extent and, ecological function.
Alt. E	■					
Alt. F	■					NOAA Fisheries short-term HCP guidelines for streams will protect and enhance riparian forest condition, extent, and ecological function.
Alt. G	■					Management similar to Alternative C1 with similar beneficial effects over time.
3b. Allochthonous Inputs						
Alt. A		■				No harvesting will result in no reduction in allochthonous inputs.
Alt. B			■			Alternatives B, C1, C2, D, E, F, and G allow some form of harvesting within the WLPZ as management for the development of late successional habitats. WLPZ canopy retention measures should result in maintenance of allochthonous inputs.
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
3c. Instream habitat and streambank stability (also see discussion in the 2005 DEIR under Sedimentation, LWD Supply, and Channel Geomorphology)						
Alt. A						No harvesting would allow development of instream large wood recruitment and associated pool and
Alt. B						FPRs may not affect instream large wood and habitat in some reaches. However, riparian silviculture may reduce large wood recruitment potential in watercourses where instream wood loads are low thereby affecting instream habitat. Mitigation regarding WLPZ harvesting is, such as could be provided by the Large Woody Debris Survey, Recruitment, and Placement management measure. With this mitigation, this alternative should have a beneficial effect on instream habitat and streambank stability over time.
Alt. C1 May 2002 DFMP						Alternatives C1 and C2 have measures that include a Road Management Plan, no-cut zones in WLPZs, promote the development of late successional riparian habitat, and the Large Woody Debris Survey, Recruitment, and Placement management measure. These alternatives would lead to improvements in instream habitat quality and streambank stability.
Alt. C2 Nov. 2002 Plan						
Alt. D						Alternatives D, E and F have measures including no-cut zones and wide stream buffers managed to promote the development of late successional riparian habitat and will likely lead to improvements in instream habitat quality and streambank stability.
Alt. E						
Alt. F						
Alt. G						Management similar to Alternative C1 with similar beneficial effects over time.
4. Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or State habitat conservation plan related aquatic resources?						
Alt. A						None of these alternatives would be in conflict with the provisions of any HCP or other local, regional, or State HCP relating to aquatic resources.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

Table III.5. Comparison of Aquatic Resource Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
5. Cause a fish or amphibian population to drop below self-sustaining levels or threaten to eliminate an aquatic community within the assessment area? (see also discussion for individual aquatic habitat impacts, in the 2005 DEIR)						
Alt. A						Lack of a Road Management Plan could result in increased sedimentation, alter flow and channel geomorphology, and restrict fish movement and access to spawning areas. Implementation of a Road Management Plan as a mitigation will reduce the potential for sedimentation, altered channel geomorphology or stream flow, and restricted fish movement from road crossing obstruction to a less than significant level. With these mitigations, this alternative could achieve some beneficial effects over time.
Alt. B						Lack of a Road Management Plan could result in increased sedimentation, alter flow and channel geomorphology, and restrict fish movement and access to spawning areas. Implementation of a Road Management Plan as a mitigation will reduce risk of sedimentation, altered channel geomorphology or stream flow, and restricted fish movement from road crossing obstruction. WLPZ harvest activity and its impact on large wood recruitment mitigated could be addressed with a mitigation such as the Large Woody Debris Survey, Recruitment, and Placement management measure. Other mitigations for promotion of late seral habitat conditions within WLPZs and added protections of Class III/headwater streams in addition to Road Management Plan, as well as application of Hillslope Management Guidelines, could further reduce risk of sedimentation, restriction of fish movement and altered channel geomorphology, and increase large wood recruitment to stream systems generally lacking this attribute. With these mitigations, this alternative could achieve some beneficial effects over time.
Alt. C1 May 2002 DFMP						Taken as a whole, the various measures to protect fish habitat elements (Road Management Plan, Hillslope Management Guidelines, WLPZ protections, Large Woody Debris Survey, Recruitment, and Placement management measure, CEG review, and Special Concern Areas would cumulatively result in a less than significant impact. Some beneficial effects would likely be achieved as well.
Alt. C2 Nov. 2002 Plan						
Alt. D						Taken as a whole, the various measures to protect fish habitat elements (Road Management Plan, Hillslope Management Guidelines, WLPZ protections, CEG review, harvesting levels and restrictions) would cumulatively result in a beneficial impact.
Alt. E						
Alt. F						
Alt. G						The provisions of Alternative C1 in conjunction with reduced harvest rates, initial implementation period harvest limitations and less evenaged management under this alternative, will result in beneficial effects for aquatic and riparian species

Table III.5. Comparison of Aquatic Resource Impacts by Various Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
6. Reduce the number or restrict the range of a rare or endangered aquatic plant or animal?						
Alt. A						Lack of Road Management Plan could result in degradation of spawning and rearing habitat and reduce the numbers of salmonids and other sensitive aquatic species for alternatives A and B. Mitigation via a Road Management Plan and Hillslope Management Guidelines would reduce potential impacts to less than significant. For Alternative B, WLPZ harvesting operations may degrade habitat and reduce fish and certain amphibian numbers under specific conditions unless a mitigation such as the Large Woody Debris Survey, Recruitment, and Placement management measure is applied.
Alt. B						
Alt. C1 May 2002 DFMP						Utilization of WLPZ retention measures, Road Management Plan, Hillslope Management Guidelines, Large Woody Debris Survey, Recruitment, and Placement management measure, etc., would result in improved habitat conditions and access to spawning and improve downstream migration.
Alt. C2 Nov. 2002 Plan						
Alt. D						Utilization of FEMAT and NOAA Fisheries short-term HCP WLPZ retention measures, Road Management Plan, and Hillslope Management guidelines may result in improved habitat conditions, access to spawning areas, downstream migration, and fish and amphibian numbers.
Alt. E						
Alt. F						
Alt. G						Management similar to Alternative C1, plus reduced harvest rates, initial implementation period harvest limitations, and less evenaged management, would result in beneficial effects over time.

6.3 Botanical Resources

Alternative G includes all of the measures that Alternative C1 provides for protecting botanical resources, including management measures 1 (protection of rare plants from invasive plants) and 2 (reduction of management-related risks in Mushroom Corners area). Further, by reducing the intensity of timber management activities relative to Alternative C1—though relatively greater use of uneven-aged management and greater use of low-intensity management regimes such as late seral forest and older forest structure—Alternative G will have reduced potential for botanical resource impacts associated with disturbance. Further, Alternative G incorporates the use of botanical surveys:

> For timber harvesting plans and other large projects with the potential for negative effects on rare plants, JDSF shall follow the Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (California Department of Fish and Game 2000).[2] In addition, JDSF will conduct periodic floristic survey in some areas to gain a better understanding of the relationships between the local plants, their distribution, and their habitats.

Alternative G's revised Goal 2 includes the following objective: Restore conifer forests where early successional hardwoods or invasive plants have become established at densities far above those typical of the mature conifer forests dominated by redwoods, Douglas-fir, Grand fir, and hemlock.

Individual Impacts

Impact 1: *The project has the potential to threaten to eliminate a plant community*. (Less than Significant)

Alternative G, as with Alternatives C1 and C2, provides for the protection of rare and unique plant communities, including additional management measure 1 for the protection of rare plants from invasive plants. With the inclusion of additional practices and changes in forest policy these protections are further ensured. Changes in policy toward restoration will enhance the Department's efforts to conserve and perhaps restore limited plant communities. Increased buffers and reduced harvest levels will improve conditions for late seral dependent plants and associated plant communities. Survey protocols will help to ensure that rare plants at risk of disturbance due to projects are identified and protection measures are incorporated in the proposed project. Alternative G would have a less-than-significant impact.

[2] California Department of Fish and Game. 2000. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities, Revised May 8, 2000, http://www.dfg.ca.gov/whdab/pdfs/guideplt.pdf

Mitigation: None required.

Impacts 2, 3, and 4 are addressed together, below.

Impact 2: *The project has the potential to threaten to reduce the number of an endangered, rare, or threatened species*. (Less than Significant)

Impact 3: *The project has the potential to have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status plant species in local or regional plans, policies, or regulations, or by the CDFG or USFWS*. (Less than Significant)

Impact 4: *The project has the potential to threaten to restrict the range of an endangered, rare, or threatened species.* (Less than Significant)

Management under Alternative G has the potential to impact or adversely affect listed plant species where they occur in project areas. However, provisions found in Alternative C1 were found to provide protection adequate to reduce potential impacts to a level of less than significant for these three impact areas. Those provisions include the two additional measures (1) protection of rare plants from invasive plant species and (2) Mushroom Corners. Alternative G contains all of the botanical protection measure that Alternative C1 does. Additionally under Alternative G, DFG botanical survey protocols will be implemented for timber harvesting plans and other large projects, Based on these factors, the potential for significant adverse impacts under Alternative G is further reduced for Impacts 2, 3 and 4, relative to Alternative C1. Alternative G would have a less-than-significant impact for these three impact areas.

Mitigation: None required.

Impact 5: *Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or State habitat conservation plan related to a botanical resource*. (No Impact)

There are no conflicts between Alternative G and any HCPs. There is no potential impact from Alternative G.

Mitigation: None required.

Impact 6: *Cumulative effects resulting in a reduction in the range of a species, or local extirpation of a plant species on a spatial scale that includes the larger analysis area. This includes changes in the environment caused by the interaction of ecological processes or multiple effects*. (Less than Significant)

Alternative C1 was found to have a less than significant impact. Changes in management and policy found in Alternative G will further reduce the potential for impacts to occur. Project-specific botanical surveys required under Alternative G will help to ensure that protected species are identified and that steps are taken to protect them. The floristic content of these surveys will help build greater understanding of botanical resources at JDSF. Alternative G now includes an objective regarding restoration of native verses invasive species in conifer forests. Alternative G will include the additional measure for protection of rare plants from invasives from Alternative C1. These two factors will reduce the risk of adverse cumulative effects to species with a preference for low to moderate canopy closure.

Also under Alternative G, The establishment of an Older Forest Structure Zone, increased late seral habitat, reduced evenaged management, lower harvest rates and interim harvesting limitations will serve to increase forest connectivity, which will be beneficial for species favoring moderate to full canopy closure.

Alternative G will have a less-than-significant impact in this area.

Mitigation: None required.

Impact 7: *Forest management activity impacts to the Mushroom Corners area could cause adverse impacts to the type localities for 26 fungi species with a resulting loss of scientific value.* (Less than Significant)

Alternative C1 contains Additional Management Measure 2 to address the special conservation needs of the Mushroom Corners area. This measure also is incorporated in Alternative G. The proportion of Mushroom Corners located within an area dedicated to late seral development has increased from approximately 1/3 to 2/3 under Alternative G. The lower relative levels of disturbance anticipated to occur within a late seral development area is expected to provide further protection for species that are dependent upon older forests.

Mitigation: None required.

Table III.6 Comparison of Botany-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1: The project has the potential to threaten to eliminate a plant community.						
Alt. A						The primary land use on JDSF would be public recreation that would utilize current facilities. Substantial change would not occur in the plant communities as a result of this type of use
Alt. B						Special concern areas limited to those required by regulation. Protection of plant communities based only on status when evaluated in CEQA projects.
Alt. C1 May 2002 DFMP						The DFMP affords protection to communities that, without mitigation, could be adversely affected. Pygmy forest and pygmy cypress groups, the communities most at risk, are included as SCAs. Other communities that are not designated SCAs, such as the redwood forest, would not be threatened under this option.
Alt. C2 Nov. 2002 Plan						Same as C1 with some individual species protection measures clarified.
Alt. D						Same as C1 for SCAs for rare communities. These alternatives have lesser amounts of more ground-disturbing even-aged timber management than C1 and C2. F calls for phasing in forest-wide plant surveys, which could lead to improved knowledge of plant communities and facilitate some planning.
Alt. E						
Alt. F						
Alt. G						Changes in policy toward forest restoration will enhance the Department's efforts to stabilize, and perhaps expand limited plant communities. Increased buffers and reduced harvest levels will improve conditions for late seral dependent plants and plant communities. Survey protocols will help to ensure that rare plants will be identified so that protection measures can be incorporated.

Table III.6. Comparison of Botany-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible**
Impact 2: The project has the potential to threaten to reduce the number of an endangered, rare, or threatened species. **Impact 3: The project has the potential to have substantial adverse effects, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status plant species in local or regional plans, policies, or regulations, or by the CDFG or USFWS.** **Impact 4: The project has the potential to threaten to restrict the range of an endangered, rare, or threatened species**						
Alt. A						Protections for rare plants via individual CEQA analysis only. Limited active management could reduce potential threats to rare plants but also limits control of invasive plants beyond roads.
Alt. B						Continuing to manage the Forest as directed by the 1983 management plan would not provide the same level of protection for endangered, rare, or threatened plant species as provided in the DFMP. Largest portion of the forest in active management. Management activities subject to the Timber Harvest Plan review process would likely include protection measures similar to the measures proposed in the DFMP. However, other management activities that have the potential to impact plant species would not be likely to include the same level of protection. Rare plant protection and invasive plant control on a project-by-project basis may have higher risk of effects on occurrences. Mitigation similar to what is the protection measures proposed for alternative C1 would be feasible for this alternative also.
Alt. C1 May 2002 DFMP						DFMP includes protection measures for endangered, rare, or threatened plant species. Mix of management techniques and age classes in North Coast conifer forest. Risks for negative or positive effects to rare plants as a result of active management would proportionally be higher for this alternative than alternatives C2-F. The DFMP, with the proposed mitigation measure incorporated and effectively executed, will reduce the level of impacts to below significant. IWM approach to has potential to reduce effects of invasive weeds on rare, threatened, and endangered plants in active managed areas.
Alt. C2 Nov. 2002 Plan						Protection measures clarified but similar to Alt C1. Management mix includes slightly more late-seral. As in Alt C1, measures incorporated and effectively executed will reduce the level of potential impacts to below significant. IWM plus mitigation measure has highest potential to reduce effects of invasive weeds on rare plants.
Alt. D						Protection measures similar to Alt C1. Management mix includes more late-seral and uneven age management, and less even-aged management. As in Alt C1, measures incorporated and effectively executed will reduce the level of impacts to below significant. Three-year herbicide moratorium has potential to delay effective control of invasive weeds that could adversely affect rare plants.

Table III.6. Comparison of Botany-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible**
Alt. E						Same as D except: emphasis on more late-seral. Herbicide moratorium has potential to increase the risk that some invasive weeds would not be effectively controlled resulting in adverse effects on rare plants.
Alt. F						Same as D except: emphasis on retention of closed canopy mid-seral stands (Initial cut prior to 1925). "Last resort" requirement for herbicide use has potential to delay effective control of invasive weeds that could adversely affect rare plants. Calls for phasing in forest-wide plant surveys, which could lead to improved knowledge of plant species of concern and facilitate some planning.
Alt. G						With the inclusion of the additional measures, botanical survey protocols, and the redirection of policy found in Alternative G, the potential for effects is further reduced relative to C1 and is less than significant.
Impact 5: Conflict with the provisions of an adopted Habitat Conservation Plan, or other approved local, regional, or State habitat conservation plan related to a botanical resource.						
Alt. A						None of the alternatives conflict with approved local, regional, or State plans.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

Table III.6. Comparison of Botany-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant Impact (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible**
Impact 6: Cumulative effects resulting in a reduction in the range of a species, or local extirpation of a plant species on a spatial scale that includes the larger analysis area. This includes changes in the environment caused by the interaction of ecological processes or multiple effects.						
Alt. A						Protection measures for rare plants limited to those required by laws, rules and regulations. Biological processes including canopy closure and further spread of invasive weeds to areas where habitat is available would continue except along roads. For rare plants adjacent to roads the risk from invasive weeds could be reduced by adoption of Additional Management Measure 1 from Alt.C1.
Alt. B						Continuing to manage the Forest as directed by the 1983 management plan would not be expected to provide the endangered, rare, or threatened plant species the same protection from cumulative effects as provided in the DFMP. Project by project analysis and protection will not be likely to result in same level of protection as remaining Alts. Mitigation similar to what is proposed for alternative C1 would be feasible for this alternative to reduce the impact to less than significant.
Alt. C1 May 2002 DFMP						DFMP protection measures would be expected to prevent significant cumulative impact to rare, threatened and endeared species. Possible minor reductions of open canopy of Upland North Coast Conifer Forest in Analysis Area may affect rare plants with that habitat preference. Some risks of effects from invasive weeds effects on rare plant occurrences in areas not part of ongoing projects. Additional Management Measure 1 would reduce risk of multiple effects by making protection of rare plant occurrences from invasive weeds a priority.
Alt. C2 Nov. 2002 Plan						Similar to C1. Higher proportion of JDSF would be managed for late seral conditions, with a potential for more habitat for species using closed canopy North Coast Conifer Forest. Additional Management Measure 1 similar to C1 would reduce risk of multiple effects by making protection of rare plant occurrences from invasive weeds a priority.
Alt. D						Similar to C1 Management mix includes more late-seral and uneven age management. Mitigation similar to what is proposed for alternative C1 would be feasible for this alternative also.
Alt. E						Same as D except: emphasis on more late-seral. Mitigation similar to what is proposed for alternative C1 would be feasible for this alternative also.
Alt. F						Same as D except: emphasis on retention of closed canopy mid-seral stands (Initial cut prior to 1925). Mitigation similar to what is proposed for alternative C1 would be feasible for this alternative also. Calls for phasing in forest-wide plant surveys, which could lead to improved knowledge of plant species of concern and facilitate some planning.

Table III.6. Comparison of Botany-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant Impact (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible**
Alt. G						Similar to C1, however the additional provision for botanical survey protocols, establishment of an Older Forest Structure Zone, increased late seral habitat, reduced evenaged management, lower harvest rates and interim harvesting limitations will serve to increase forest connectivity and reduce disturbance. The policy on restoration and inclusion of the measure from Alt C1 to protect rare plants from invasive weeds will reduce cumulative effects to plant species that require some canopy openings.
Impact 7: Forest management activity impacts to the Mushroom Corners area could cause adverse impacts to the type localities for 26 fungi species with a resulting loss of scientific value.						
Alt. A						The primary land use on JDSF would be public recreation that would utilize current facilities. Substantial management effects would not occur in the Mushroom Corners area though a less than significant increase in stand density would be experienced in the fungi type localities.
Alt. B						Species protections limited to those required by regulation for THP and CEQA projects. Future stand conditions could be different than during the time period Mushroom Corners has been used as a scientific resource. Loss of individual type localities could occur, resulting in a potentially significant impact. Mitigation similar to what is proposed in Additional Management Measure 2 would be feasible for this alternative and would result in a less than significant impact.
Alt. C1 May 2002 DFMP						Approximately 1/3 the Mushroom Corners area would fall in a Late Seral Development area. The DFMP also affords protection to habitat elements and retains stand structure within the range of conditions during the period Mushroom Corners has been a scientific resource. Application of Additional Management Measure 2 would further help to ensure the protection and enhancement of the scientific values of the Mushroom Corners area.
Alt. C2 Nov. 2002 Plan						Same as C1 with increased proportion of the Mushroom Corners area overlain by Late Seral Development Area Designation. Application of Additional Management Measure 2 would further help to ensure the protection and enhancement of the scientific values of the Mushroom Corners area.
Alt. D						Alternatives D through F generally provide the same level of protection to scientific value of fungi type localities alternative C1. Mitigation similar to what is proposed for Additional Management Measure 2 would be feasible for these alternatives and would help to ensure that appropriate levels of management continue to protect the type localities.
Alt. E						
Alt. F						
Alt. G						This alternative provides late seral development area protection to over 2/3 of the Mushroom Corners area, substantial increase over that provided under C1.

6.4 Timber Resources

As documented in earlier sections (see, e.g. section II, above), Alternative G makes some significant changes to Alternative C1 with respect to the management of timber resources. Looking most generally, Timber Harvesting has been replaced by Forest Restoration as the Board's number two goal. More specifically, Alternative G provides quantitative long term structural goals for the forest (Table II.1) and identifies the amounts and general locations of the silvicultural methods (Table II.2) that will be used to attain these goals. Use of even-aged management is reduced, and specific limitations are placed on the amount of the Forest that may be treated with clearcutting and other even-aged harvest methods over time (see note at bottom of Table II.2). Additional measures included in Alternative G but not in Alternative C1 are additional area in late seral development and the creation of an extensive Older Forest Structure Zone. Further, Alternative G reduces average annual harvest to about 20 million board feet per year from 31 million Board feet per year in Alternative C1. Further substantial restrictions are to be placed on timber management during an initial implementation period of up to three years in length.

Individual Impacts

Impact 1. ***The project has the potential to have an adverse substantial effect on old-growth forest habitat (a unique habitat type).*** **(Beneficial)**

Alternative C1 provides for the protection of the eleven old growth groves and the establishment of adjacent management areas for the purpose of recruitment of additional late seral stands. Protection for individual old growth trees within managed stands is also provided. Alternative G adds to this in providing for the establishment of a 6,803-acre Older Forest Structure Zone, which affords additional protection to several old growth groves and the adjacent late seral stands. Alternative G also provides for an additional 1,549 acres of late seral stand development. Buffers, restricting management adjacent to these stands, provide an enhanced level of protection. Alternative G would have a beneficial effect on old-growth forest habitat.

Mitigation: None required.

Impact 2. ***The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to protection of late successional forest characteristics.*** **(Less than Significant and Beneficial)**

Changes found in Alternative G are reflective of changes in the Board's policy for managing JDSF. Timber Harvesting has been replaced by Forest Restoration as the Board's number two goal. The Forest Restoration Goal contains objectives supportive of maintaining and developing late seral forests:

Increase the amount of older forest structure and late seral forest available for terrestrial wildlife, including areas adjacent to aquatic habitats.

Improve habitat connectivity and reduce forest fragmentation, including the concepts of corridors and contiguous habitat.

Use a range of management techniques to compare natural and accelerated forest restoration approaches while maintaining high canopy cover across the whole Older Forest Structure Zone (OFSZ) and other areas designated for development of late seral forest characteristics.

Cooperate with other agencies and private conservation organizations interested in forest restoration on research into approaches to increase the pace at which older forest structure characteristics can be developed through active management.

Alternative G provides for the retention, protection and recruitment of 1,549 acres of late seral forest characteristics in addition to the 9,780 acres proposed for late seral development under alternative C1. Buffers that restrict management activities adjacent to these stands will provide additional protection. Overall under Alternative G, stands managed for older forest characteristics would total over 16,000 acres and exceed 33 percent of the Forest.

Alternative G, together with the 2005 DEIR and this RDEIR is consistent with the Forest Practice Rule requirement regarding the protection of late seral forest as addressed under 14 CCR § 919.16 and other sections of the Forest Practice Rules. Its impacts on late seral forests would be less than significant and beneficial.

Mitigation: None required.

Impact 3. *The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to Maximum Sustained Productivity of high quality timber products.* (Less than Significant)

Alternative G would reflect changes in the Board's policies for the management of JDSF. Timber Management, which was Goal #2 under Alternative C1, has been changed to Goal # 4; replaced by Forest Restoration. This shift in policy is reflected in Alternative G where the proposed average annual harvest level over the next decade is 20 million board feet as compared with alternative C1 where the annual harvest was expected to be 31 million board feet. Alternative G's harvest level is less than half of the Forest's annual growth and about one percent of inventory. Long-term sustained yield (LTSY) under Alternative G is 56 million board feet per year, which is greater than the 45.2 million board feet per year under Alternative C1. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Table III.7. Summary of Estimated Annual Economic Effects for EIR Alternative Harvest Levels.

Economic Factor	Alternative							
	A	B	C1	C2	D	E	F	G
LTSY (MMBF)	64	51	45	46	53	62	55	56
First Decade Annual Harvest Level (MMBF)	0	29	31	31	25	8	19	20
Number of Jobs Provided	0	484	516	516	416	140	324	335
Local Wages, $	0	12,564,092	13,386,828	13,386,828	10,798,181	3,649,291	8,415,217	8,703,175
Local Timber and Sales Taxes, $	0	534,051	570,335	570,335	458,677	150,916	356,090	368,790

Impact 4. ***The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to application of silvicultural methods*****. (Less than Significant)**

As compared to Alternative C1, Alternative G (Table II.2, above) describes a new array of silvicultural prescriptions proposed for JDSF. Alternative G reduces the area of the Forest where even-aged management may be applied from 29 percent to 26 percent. To further address public concerns regarding even-aged management, a maximum of 2,700 acres per decade will be available for even-aged management. Clearcutting, the most intensive form of even-aged management, will be strictly limited and may only be carried out for the purposes of research, demonstration or to address forest health or regeneration issues. The majority of the forest will be managed under an uneven-aged management system. Table II.3 provides a short term harvest schedule and proposed silvicultural treatments consistent with this new direction. The restrictions on even-aged management under Alternative G will reduce potential for impacts as compared with Alternative C1. As with the other alternatives (except A) THPs submitted under Alternative G would be reviewed for compliance with the FPRs and the final forest management plan. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 5. ***The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the***

purpose of avoiding or mitigating environmental effects relating to maintenance of species diversity. **(Less than significant)**

The 2005 DEIR found that Alternative C1 would have a less than significant impact for maintenance of species diversity. Changes in management proposed in Alternative G are reflective of a change in the policies for managing JDSF. Alternative G adds a new objective to its first Goal, RESEARCH & DEMONSTRATION:

> Maintain a diverse, dynamic matrix of forest habitats and seral stages to provide a broad range of forest conditions available for research and demonstration.

Diversity in forest structure would be achieved, in part, through the application of silvicultural treatments and achievement of the forest structure goals described in Alternative G. The restrictions on even-aged management, development of late seral areas, protection of old growth stands, and establishment of an Older Forest Structure Zone will contribute to the diversity in stand structure, habitat and resultant species diversity.

With these changes to the measures in Alternative C1, Alternative G would maintain a management regime that would have a less-than-significant impact on species diversity.

Mitigation: None required.

Table III.8. Comparison of Timber Resource Impacts by Alternatives.						
Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible
Impact 1. The project has the potential to have an adverse substantial effect on old-growth forest habitat (a unique habitat type).						
Alt. A		■				The primary management on JDSF lands would be limited road maintenance to allow continued public access. No timber harvesting would occur. Although this alternative does not include specific protection for old-growth forests, the anticipated level of public use is unlikely to result in impact to the old-growth groves
Alt. B				■		The 1983 Management Plan establishes no-harvest protections for 115 acres of old-growth groves in the Forest; however, it has been the Forest's policy to protect 11 groves totaling 459 acres. Continued protection of the groves is a feasible mitigation to reduce the impact to less than significant.
Alt. C1 May 2002 DFMP	■					The proposed project provides protection to old-growth groves, aggregations of old-growth trees and scattered single old-growth trees with some exceptions for management purposes. In addition, 3 of the protected groves will be buffered with late seral development areas. Retention of the groves and buffers as well as the other more scattered old-growth aggregations and trees will be a beneficial impact to this resource.
Alt. C2 Nov. 2002 Plan	■					In addition to the protections in C1, this alternative allocates the Russian Gulch and Thompson Gulch compartments to late seral recruitment areas. These areas eventually will develop into old-growth forest habitat.
Alt. D	■					These alternatives are similar to alternatives C1 and C2 in protection for old-growth forest habitat and would provide a similar beneficial impact. The main emphasis of alternative E is management to develop old growth characteristics across the Forest.
Alt. E	■					
Alt. F	■					
Alt. G	■					In addition to the measures included in C1, this alternative establishes a 6,803-acre Older Forest Structure Zone which provides additional protection to several old growth groves and the adjacent late seral stands. Provides an additional 1,549-acre late seral development area. Buffers, restricting management adjacent to these stands, provide an enhanced level of protection.

Table III.8. Comparison of Timber Resource Impacts by Alternatives.						
Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible
Impact 2. The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to protection of late successional forest characteristics.						
Alt. A		■				No timber harvesting, timber stand improvements or other forest management activities would be undertaken. Since no commercial harvest would occur, no direct impacts to late seral forest characteristics would occur. Without management late seral characteristics would develop slower over a longer time frame.
Alt. B			■			Commercial timber harvesting would occur at a level of approximately 35 million board feet per year. Individual THPs would continue to comply with forest practice rules pertaining to late seral/successional forest characteristics. The Mendocino Woodlands Special Treatment Area and WLPZ only would be managed to promote the development of these types of forest characteristics.
Alt. C1 May 2002 DFMP	■					The DFMP provides for retention of late seral and late seral forest characteristics, as well as recruitment of these habitat components. The areas managed for development of late seral structure conditions will occupy about 20 percent of the State Forest. The Alternative will manage for recruitment of trees with late seral characteristics in areas that enhance the ecological effects of forests with these structural characteristics. In the near term there would be limited development of late seral characteristics, however in the long term there would be a beneficial impact. Late seral characteristics would be most likely to develop in the areas managed under the group selection system.
Alt. C2 Nov. 2002 Plan	■					In addition to the protections in C1, this alternative allocates the Russian Gulch and Thompson Gulch compartments to late seral recruitment areas.
Alt. D	■					This alternative would provide for retention of late seral forest characteristics, and set aside more areas where recruitment of these habitat components would be the management goal as compared to the proposed project. Harvest levels would be reduced across the Forest, rotation ages would be lengthened, and only limited even-aged harvests would be used. Selection and group selection would be the primary silvicultural methods used. As discussed in the project impacts section, use of the selection system may not produce the desired late seral characteristics as anticipated, specifically, multiple age classes and canopy layers may not develop as anticipated. Late seral characteristics would be most likely to develop in the areas managed under the group selection system.
Alt. E	■					The emphasis of this alternative is the development of late seral forest and the restoration of a natural forest ecosystem. Timber harvesting would be very limited and used to develop late seral characteristics. The majority of the Forest would not be actively managed, but would be allowed to develop without intervention. Given that all of the Forest, with the exception of the remaining old-growth reserves, has

Table III.8. Comparison of Timber Resource Impacts by Alternatives.						
Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible
						developed as a result of timber harvest, the time span to develop late seral forest may be on the order of 100s of years (refer to the impact section). So there will likely be a beneficial impact to late seral habitat as a result of this alternative, but not for decades or centuries.
Alt F						Similar to E, but more emphasis on promoting late seral characteristics through management, so these would develop more quickly.
Alt. G						Provides for the retention, protection and recruitment of 1,549 acres of late seral forest characteristics in addition to the 9,780 acres proposed under alternative C1. Buffers that restrict management activities adjacent to these stands will provide additional protection. Stands managed for older forest characteristics would exceed 33 percent of the Forest.

Table III.8. Comparison of Timber Resource Impacts by Alternatives.						
Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible
Impact 3. The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to Maximum Sustained Productivity of high quality timber products.						
Alt. A						No timber harvesting, timber stand improvements or other forest management activities would be undertaken in this alternative. Since no commercial harvest would occur, the Department would not be required to demonstrate compliance with MSP rule standards. However, the timber stands would continue to develop undisturbed and the timber volume would continue to increase until decadence and senescence results in negative growth. Roads would be maintained to the degree necessary for protection of forest lands from wildfire. Lack of harvest would not satisfy the MSP component of regional economic vitality and employment, thus there would be some level of less than significant impact.
Alt. B						Refer to the projects impact section for a complete assessment of the potential impacts of the proposed project with regards to growth and yield. Commercial timber harvesting would continue well below annual growth accruals (see table VII.6.3.1 for harvest levels and growth estimates (LTSY) for each alternative). The Department would continue to demonstrate compliance with MSP rule standards on an individual THP basis using the option "A" document. During the life of the Management Plan, no short term significant impact to MSP or growth and yield are anticipated because the proposed project includes a monitoring program and adaptive management approach to ensure that average annual harvest levels do not exceed average annual growth. Harvest levels are set well below estimated growth in all these alternatives. These precautions will prevent a significant adverse impact from occurring.
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						Commercial timber harvesting levels would be much less than annual growth accruals [see Table VII.6.3.1 for harvest levels and growth estimates (LTSY) for each alternative]. The Department would continue to demonstrate compliance with MSP rule standards on an individual THP basis using the option "A" document. Alternatives D and F strictly limit evenaged management. Alternative E limits silviculture to unevenaged methods only. Errors in growth and yield modeling could result in the same potential long term and cumulative impact discussed in the 2005 DEIR in alternatives B, C1 and C2. However, harvest levels are so conservative under these alternatives that this possibility is extremely unlikely. A monitoring program and adaptive management approach that will be used to ensure that average annual harvest levels do not exceed average annual growth.
Alt. E						
Alt. F						

Table III.8. Comparison of Timber Resource Impacts by Alternatives.						
Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible
Alt. G			■			The proposed average annual harvest level over the next decade is reduced to 20 million board feet as compared with alternative C1 where the annual harvest was expected to be 31 million board feet. Alternative G's harvest level is less than half of the Forest's annual growth and about one percent of inventory. However, long-term sustained yield is higher under Alternative G than C1.
Impact 4. The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to application of silvicultural methods						
Alt. A		■				No silvicultural methods would be applied in this alternative.
Alt. B			■			Management plan measures for silvicultural methods are consistent with all FPRs, the PRC, and other rules and regulations. Individual THPs would be prepared and submitted at approximately the same rates as in the recent past (alternatives B, C1, C2, and G) or at reduced rates (alternatives D through F). THPs would be reviewed for compliance to the FPRs and would be approved only if found to be in compliance with the Forest Practice Rules including all applicable rules pertaining to silviculture.
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			

Table III.8. Comparison of Timber Resource Impacts by Alternatives.						
Alternatives						Discussion
Impact*	1	2	3	4	5	*Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant with Mitigation (5) Significant–Mitigation Not Feasible
Impact 5. The project would result in a conflict with the Forest Practice Rules, Public Resource Code or other applicable rules and regulations adopted for the purpose of avoiding or mitigating environmental effects relating to maintenance of species diversity.						
Alt. A						No timber harvesting, timber stand improvements or other forest management activities would be undertaken. Since no commercial harvest would occur, only gradual changes in species diversity would occur, as the Forest would slowly gravitate towards a late successional species mix over a long period of time.
Alt. B						Individual THPs would comply with forest practice rules pertaining to species diversity. The full range of silvicultural prescriptions would be available to influence species diversity. However, the 1983 Plan has no goals or special provisions for providing or monitoring tree species diversity.
Alt. C1 May 2002 DFMP						Individual THPs would comply with forest practice rules pertaining to species diversity. The full range of silvicultural prescriptions would be available to influence species diversity. The ongoing inventories and monitoring plan will enable the detection and correction of any trends away from the desired species mix. Alternatives C1 and C2 address hardwood and conifer species mixes to favor historical natural stand composition.
Alt. C2 Nov. 2002 Plan						
Alt. D						Individual THPs would comply with forest practice rules pertaining to species diversity. Only selection prescriptions will be permitted under alternative E, and only selection and group selection prescriptions and severely limited evenaged management would be permitted under alternatives D and F. These measures could create a potential environmental impact by virtue of a shift toward shade tolerant species at the expense of the shade intolerant species redwood and Douglas-fir. However, alternatives E and F both call for maintaining a species mix similar to old growth forests. Alternative D calls for managing hardwoods as a significant stand component to demonstrate development of high quality hardwood trees, habitat, and product value. The ongoing inventories and monitoring plan will enable the detection and correction over time of any trends away from the desired natural species mix.
Alt. E						
Alt F						
Alt. G						Similar to C1 however, with species diversity shifting toward species that prefer older stand characteristics through restrictions on the on even-aged management, development of additional late seral areas, and establishment of the Older Forest Structure Zone.

6.5 Forest Protection

Addressing potential impacts related to forest protection is not necessarily required under CEQA. However, the 2005 DEIR provides a section on forest protection (VII.6.4) to supplement disclosure and analysis provide in the Timber Resources section (VII.6.3). Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to Forest Protection.

6.6 Wetlands

Alternative G is essentially similar to Alternative C1 with respect to wetlands. However, by reducing the area of the Forest where even-aged management is permitted and increasing the area dedicated to lower intensity harvesting prescriptions such as late seral forest development and older forest structure, Alternative G may have a somewhat lower potential for disturbing wetlands.

Individual Impacts

Impact: *A program-related management activity would have a substantial adverse effect on federally protected wetlands through direct removal, filling, hydrological interruption, or other means*. (Less than Significant)

Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to Wetlands. It would have a less-than-significant impact.

Mitigation: None required.

Table III.9. Comparison of Wetland Impacts by Alternatives.

Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact: A program-related management activity would have a substantial adverse effect on federally protected wetlands through direct removal, filling, hydrological interruption, or other means.						
Alt. A		■				Under this alternative, the primary land use on JDSF would be public recreation that would utilize current facilities. Wetlands would not be significantly impacted either directly or indirectly by recreational use of the Forest
Alt. B				■		The 1983 Management Plan does not specifically address the protection of wetlands for non-THP projects. Feasible mitigations could be developed for non-THP projects that reduce impacts to less than significant. Activities subject to the THP review process will provide protection to riparian areas that could be defined as wetlands.
Alt. C1 May 2002 DFMP			■			There is no substantial difference among Alternatives C1, C2, D E, F and G regarding their potential impacts to wetlands. For each alternative, the DFMP requires protection of wetlands and activities subject to the THP review process and will provide protection to riparian areas that could be defined as wetlands.
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			

6.7 Wildlife and Wildlife Habitat

Alternative G adopts all of the protection measures for wildlife and wildlife habitat that were included in Alternative 1. In addition to incorporating the changes to Alternative C1 identified at the beginning of the Biological Resources section (section III.6.1), Alternative G also adopts, as a management measure, Mitigation 1 that was developed for Alternative C1 in the 2005 DEIR.

> **Measure 1** Retain all snags within all timber harvest areas with the exception of snags that pose a fire or safety hazard, or are within the alignment of roads proposed for construction. The largest snags, including residual old-growth snags, should have priority for protection until the snag retention goals of the DFMP are met.

Individual Impacts

Impact 1*: Potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the CDFG or U.S. Fish and Wildlife Service.* (Impacts to individual elements range from Less than Significant to Beneficial; see below).

Impact 1a: *Late Successional/Old-growth Forest.* (Less than Significant)

Alternative G provides for the retention, protection and recruitment of 1,549 acres of late seral forest characteristics in addition to the 9,780 acres proposed under Alternative C1. Buffers that restrict management activities adjacent to these stands will provide additional protection. Stands managed for development of older forest characteristics would exceed 33 percent of the Forest. Alternative G proposes the establishment of an Older Forest Structure Zone, totaling 6,803 acre. The protection of the existing old growth stands is also enhanced with the creation of buffers that limit management. Species dependent upon certain attributes of these forest types will not be significantly impacted by management occurring at JDSF under Alternative G.

Mitigation: None required.

Impact 1b: *Snags and Down Wood*. (Less than Significant)

Alternative C1 provides goals for snags and down wood and directs management to attain these goals, including recruitment and monitoring. In addition to these measures, Alternative G provides for the establishment of an Older Forest Structure Zone and an additional late seral development area where snags will

be recruited and maintained. In addition, Measure 1 (see above) has included in Alternative G to ensure protection of snags where feasible. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 1c: *Hardwoods.* (No Impact)

Management under Alternative G will not differ significantly in its effects on hardwoods as compared with Alternative C1. It will have no impact.

Mitigation: None required.

Impact 1d: *Riparian Habitats.* (Beneficial)

Management of riparian areas will not differ significantly between Alternatives C1 and G. Alternative G will have beneficial impacts.

Mitigation: None required.

Impact 1e: *Other Unique/Special Habitats and Features.* (Less than Significant)

Alternative G adopts the protection measures for snags (see Impact 1b, above) and old growth trees that will ensure the protection of old trees with basal hollows and cavities. These special habitat features will not be significantly affected by management under Alternative G, resulting in a less-than-significant impact.

Mitigation: None required.

Impact 1f: *Wildlife Communities and Species Habitat Value.* (Less than Significant)

Alternative G is similar here to Alternative C1, except that it provides for development of substantially more late seral and older forest habitat area. This additional area includes the 5,700 acres of older forest development in the OFSZ and 1,549 acres of late seral development area in the Russian Gulch/Lower Big River area. This change, combined with the reduced use of even-aged management, will reduce the amounts of early successional habitats, relative to Alternative C1. Alternative G will have a less-than-significant impact.

Mitigation: None required.

Impact 1g: *Game Species*. (Less than Significant)

Management under Alternative G will produce relatively greater amounts of older forest habitats (the OFSZ and the late seral development/murrelet habitat recruitment area of Russian Gulch and Lower Big River) and lesser amounts of early seral habitat as compared with Alternative C1. Black bear habitat capability will benefit most from this shift in forest structure. Game species that prefer early seral habitats, such as mourning dove and mule (black tail) deer, will experience some loss of habitat. Overall, changes in game species populations and habitat quality are expected to be less than significant under Alternative G.

Mitigation: None required.

Impact 1h: *Lotis Blue Butterfly*. (Beneficial)

Management under Alternative G will not differ significantly in its effects on lotis blue butterfly as compared with Alternative C1. Alternative G will have a beneficial impact.

Mitigation: None required.

Impact 1i: *Southern Torrent Salamander and Tailed Frog*. (Less than Significant)

Management under Alternative G will not differ significantly in its effects on the southern torrent salamander or the tailed frog as compared with Alternative C1. It would have a less-than-significant impact.

Mitigation: None required.

Impact 1j: *Northern Red-legged Frog*. (No Impact)

Management under Alternative G will not differ significantly in its effects on the northern red-legged frog as compared with Alternative C1. Alternative G would have no impact on this species.

Mitigation: None required.

Impact 1k: *Foothill Yellow-legged Frog*. (No Impact)

Management under Alternative G will not differ significantly in its effects on the foothill yellow-legged frog as compared with Alternative C1. Alternative G would have no impact on this species.

Mitigation: None required.

Impact 1l: *Northwestern Pond Turtle*. (Less than Significant)

Management under Alternative G will not differ significantly in its effects on the northwestern pond turtle as compared with Alternative C1.

Mitigation: None required.

Impact 1m: *Northern Goshawk.* (Less than Significant)

Management under Alternative G will not differ significantly in its effects on the northern goshawk as compared with Alternative C1. It would have a less-than-significant impact.

Mitigation: None required.

Impact 1n: *Cooper's Hawk.* (Less than Significant)

Management under Alternative G will not differ significantly in its effects on the Cooper's hawk as compared with Alternatives C1. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 1o: *Golden Eagle*. (Less than Significant)

In addition to the snag measures included in Alternative C1, Alternative G adopted an additional protection measures for snags (Measure 1, above) that will ensure the protection of nest trees. However, management under Alternative G will not differ significantly in its effects on the golden eagle as compared with Alternatives C1. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 1p: *Bald Eagle*. (Less than Significant)

In addition to the snag measures included in Alternative C1, Alternative G adopted the additional protection measures for snags (Measure 1, above) and contributes toward the development and retention of late seral habitat and stands with older forest structure. These measures will provide somewhat better potential habitat for the bald eagle than Alternative C1. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 1q: *Osprey*. (Less than significant)

Management under Alternative G will not differ significantly in its effects on the osprey as compared with Alternatives C1. However, additional measures to protect snags (see Measure 1, above) and develop additional late seral habitat under Alternative G will improve nesting habitat opportunity for osprey. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 1r: *Peregrine Falcon*. (Less than Significant)

Management under Alternative G will not differ significantly in its effects on the peregrine falcon as compared with Alternative C1. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 1s: *Marbled Murrelet*. (Less than Significant)

In addition to those measures provided in Alternative C1, Alternative G proposes the following changes in management within JDSF for the purpose of developing and protecting habitat for the marbled murrelet:

> The area devoted to development of late-seral forest habitat has been increased by 1,549 acres under Alternative G. Specifically, the area of upper Russian Gulch and lower Big River adjacent to two State Parks has been changed from uneven-aged management to late-seral development, specifically intended to recruit habitat for the marbled murrelet. This represents a significant increase in the level of environmental protection and habitat enhancement for threatened and endangered species commonly associated with older redwood forest.

Alternative G also proposes the establishment of an Older Forest Structure Zone, totaling 6,803 acres and the protection of the old growth stands with the creation of buffers that limit adjacent management. In combination these measures will result in a less than significant effect to marbled murrelet for Alternative G.

Mitigation: None required.

Impact 1t: *Northern Spotted Owl*. (No Impact)

As compared to Alternative C1, increases in late seral habitat and stands with older forest structure proposed in Alternative G will be beneficial to northern spotted owls for several habitat needs. However, a decrease in evenaged management, as proposed in Alternative G, may reduce dusky footed woodrat populations on a site-specific basis. The wood rat is an important prey species for the owls. Overall, Alternative G would have no impact on the northern spotted owl.

Mitigation: None required.

Impact 1u: *Vaux's Swift and Purple Martin*. (Less than Significant)

Alternative G provides for the establishment of an Older Forest Structure Zone and additional late seral development area where snags will be recruited and maintained. In addition to the snag recruitment and protection measures incorporated into Alternative C1, Alternative G includes Measure 1, detailed above. In combination, these measures will protect important habitat elements for these species. Alternative G would have a less-than-significant impact on this species.

Mitigation: None required.

Impact 1v: *Yellow Warbler*. (Less than Significant)

Management under Alternative G will not differ significantly in its effects on the yellow warbler as compared with Alternatives C1. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 1w: *Sonoma Red Tree Vole*. (No Impact)

Alternative G includes measures that contribute to the maintenance and development of late successional, closed-canopy forest conditions that are important to this species. In addition, dispersal corridors and habitat connectivity will be increased through the establishment of an Older Forest Structure Zone that connects many of the old growth groves and late-seral development areas. These changes in management from that proposed in Alternative C1 will be beneficial and overall, Alternative G will have no impact on red tree voles.

Mitigation: None required.

Impact 1x: *Pacific Fisher*. (Less than Significant)

Pacific fisher are not known to occur at JSDSF: however, Alternative G includes measures that contribute to the maintenance and development of late successional, closed-canopy forest conditions that are important to Pacific fishers. In addition, dispersal corridors and habitat connectivity will be increased through the establishment of an Older Forest Structure Zone that connects many of the old growth groves and late-seral development areas. These changes in management from that proposed in Alternative C1 will be beneficial in the formation of additional desirable habitat.

Mitigation: None required.

Impact 2: *Reduce the number or restrict the range of a rare or endangered animal*. (Less than significant)

Alternative C1 identified impacts to snag dependent species as a potentially significant effect requiring mitigation. Changes in management proposed in Alternative G provide for the establishment of an Older Forest Structure Zone and an additional late seral development area where snags will be recruited and maintained. In addition, measures have been adopted in Alternative G to ensure protection of snags within timber harvest areas (Measure 1, above). In combination, these measures will protect most snags for these species and have reduced this effect to less than significant.

Mitigation: None required.

Impact 3: *Interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery areas.* (Beneficial)

In addition to the measures provided in Alternative C1, Alternative G will increase dispersal corridors and habitat connectivity through the establishment of the Older Forest Structure Zone that connects many of the old growth groves and late-seral development areas. This measure will improve dispersal habitat for species exhibiting a preference for closed canopy conditions.

Mitigation: None required.

Impact 4: *Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), or other approved local, regional, or State habitat conservation plan related to a wildlife resource*. (No Impact)

JDSF is not subject to the provisions of an HCP or other approved local, regional, or State habitat conservation plan related to a wildlife resource.

Mitigation: None required.

Impact 5: *Cause a wildlife population to drop below self-sustaining levels or threaten to eliminate an animal community*. (Less than Significant)

Management under Alternative G does not differ significantly from Alternative C1. Based on the analysis in the 2005 DEIR, wildlife populations will not drop below self-sustaining levels or threaten to eliminate an animal community.

Mitigation: None required.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1: Potential to have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive or special status species in local or regional plans, policies, or regulations, or by the CDFG or U.S. Fish and Wildlife Service.						
Impact 1a: Late Successional/Old-growth Forest						
Alt. A		■				Alternative A does not propose the removal of old-growth or late successional habitats. Unlike alternatives C1, C2, D, E, and F, it does not provide for specific management to advance the development of late-successional habitats. Although the natural development of late successional habitats is a long process, the quality of late successional habitats on JDSF is expected to slightly improve under Alternative A within the 10 year planning period. However, the development of late successional habitat is expected to take longer under Alternative A than under alternatives C1, C2, D, E and F
Alt. B			■			Although Alternative B is expected to retain the 459 acres of designated old-growth groves, stands containing CWHR 6, 5D, or 5M could be harvested resulting in the degradation of late successional habitats. Like Alternative C1, the amount of late successional habitat that would be harvested under Alternative B is unknown. Alternative B does not propose any specific management to advance the development of late successional habitat and it has greater emphasis on evenaged management than Alternative C1. However, due to FPR requirements and restrictions for late successional habitats, Alternative B is not likely to significantly reduce the amount of late successional habitat on JDSF. In the long term, stands where harvesting is restricted should develop into late successional habitat, but to a lesser extent than under the other alternatives and not within the 10 year planning period.
Alt. C1 May 2002 DFMP			■			Refer to section: “Project Impacts.”
Alt. C2 Nov. 2002 Plan			■			Similar to C1, though more late-seral habitat would be provided.
Alt. D			■			Under Alternative D, JDSF will be managed as largely an uneven-aged forest. Like Alternative C1, existing stands of old-growth and aggregates will be retained, and designated areas will be managed for the development of late successional forest. In addition, the emphasis on uneven-aged management and the retention of late successional elements such as snags, LWD, etc. in harvest areas should minimize potential degradation of late successional habitat on JDSF. Although harvesting may occur within late succession habitats and short-term degradation would be expected, the amount and quality of late successional habitat is expected to increase over time. Thus, the impacts of Alternative D on late successional habitats are expected to be less than significant within the 10 year planning period and beneficial in the long term.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. E	■					Alternative E does not propose the removal of any late-successional or old-growth habitats. In addition, where harvesting did occur, it would focus on the development of late successional habitat. Although late successional habitat is not expected to be developed within the life of this plan, the management direction under Alternative E would be expected to improve the condition of late successional habitat in the short term and increase quality and quantity in the long term.
Alt. F	■					Alternative F would prevent timber harvest in old-growth stands. Any tree alive since 1850 or earlier is not subject to timber harvest unless a health or safety hazard. This alternative would provide greater areas of late seral forest than most other alternatives. Requires the development of contiguous older forest conditions using existing old growth groves. Late seral development is promoted in Marbled Murrelet Management Areas and riparian zones.
Alt. G			■			Alternative G provides for the retention, protection and recruitment of 1,549 acres of late seral forest characteristics in addition to the 9,780 acres proposed under Alternative C1. Buffers that restrict management activities adjacent to these stands will provide additional protection. Stands managed for development of older forest characteristics would exceed 33 percent of the Forest. Alternative G proposes the establishment of an Older Forest Structure Zone totaling 6,803 acre. The protection of the old growth stands is also enhanced with the creation of buffers that limit management. Species dependent upon certain attributes of these forest types will not be significantly impacted by management occurring at JDSF under this alternative.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1b: Snags and Down Wood						
Alt. A	■					Alternative A does not propose the removal or creation of snags and downed wood. Therefore, the number of snags and amount of downed wood is expected to naturally increase within the 10 year planning period under Alternative A.
Alt. B				■		Although snags and downed wood will be retained as directed by the FPRs, their removal is still likely to occur under Alternative B. Snags and downed wood are lacking on JDSF and without specific retention measures, the number of snags could be significantly reduced on JDSF under Alternative B. This impact could be mitigated to less than significant by applying snag protection measures similar to Mitigation 1.
Alt. C1 May 2002 DFMP				■		Refer to detailed project impacts in the 2005 DEIR. Apply Mitigation 1 to reduce impacts to less than significant.
Alt. C2 Nov. 2002 Plan				■		Similar to C1.
Alt. D				■		The potential impacts to snags under Alternative D are the same as under Alternative C1, except that the increase in recreation could increase the number of snags considered a safety hazard. Thus, the potential impacts of Alternative D on snags could be slightly greater than those of alternative C1. Application of Mitigation 1 would reduce impacts to less than significant.
Alt. E	■					The potential impacts to snags under Alternative E are similar to Alternative D. However, Alternative E has proposed harvest on only 25% of the Forest and will focus on the development of late-successional habitat. This will likely include the retention /recruitment of snags. The impacts of Alternative E are expected to be beneficial.
Alt. F	■					Expected increase in amount of late seral forest conditions under this alternative would likely increase the density of large snags over time. Retention of individual trees alive since 1850 or earlier would also increase density of snags. Maintenance of high stocking levels is expected to increase snag recruitment.
Alt. G			■			Alternative G provides for the establishment of an Older Forest Structure Zone and an additional late seral development area where snags will be recruited and maintained. In addition, measures have been adopted in Alternative G to establish goals, recruitment, and monitoring for snags and to ensure protection of snags in harvest areas where feasible.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1c: Hardwoods						
Alt. A						Alternative A does not propose the removal of hardwoods. Therefore, Alternative A will not impact the number, distribution, or availability of hardwoods.
Alt. B						Under Alternative B, hardwoods are recognized for their habitat value, but would be aggressively reduced and replaced with native conifers. Impacts on hardwoods and their habitat values are expected to be significant, but could be mitigated with measures like those in C1 to mange hardwoods to natural stand levels.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Same as C1
Alt. D						Under Alternative D, hardwoods will be managed as a significant component of the stand. Although some hardwoods are expected to be harvested under Alternative D, the overall effect is expected to be beneficial.
Alt. E						Under Alternative E, JDSF would manage hardwoods to maintain a species mix similar to old-growth forest conditions. In other words, hardwoods would be managed as a significant portion of the stands. Although some hardwoods may be harvested, the impacts are expected to be positive but less than Alternative D.
Alt. F						Would manage hardwoods to achieve levels associated with late seral/old growth forest. Impacts are positive but less than Alternative D.
Alt. G						Management under Alternative G will not differ significantly in its effects on hardwoods as compared with Alternative C1.
Impact 1d: Riparian Habitats						
Alt. A						Alternative A does not propose the removal or alteration of riparian habitats. Thus, Alternative A is not expected to impact Riparian habitats.
Alt. B						Under Alternative B, riparian habitats will be managed according to FPRs. Protection is somewhat less than Alternative C1. Impacts of Alternative B are expected to be significant but could be feasibly mitigated to less than significant with measures such as those provided in C1.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Same as C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. D						Alternative D proposes larger WLPZs (FEMAT) than Alternative C1. WLPZs will be managed for the development of late successional habitat. These measures should protect and/or improve the conditions of riparian habitats
Alt. E						The protection and management of riparian habitats are the same under Alternative E as under Alternative D. Impacts of Alternative E on riparian habitats would be similar to Alternative D.
Alt. F						This alternative proposes NOAA Fisheries short-term HCP standards for riparian protection. This high-level of protection will benefit riparian forest habitat and ecosystem function.
Alt. G						Management of riparian areas will not differ significantly between Alternatives C1 and G.
Impact 1e: Other Unique/Special Habitats and Features						
Alt. A						Alternative A does not propose management activities that will impact or degrade unique habitats or special features. Therefore, Alternative A is not expected to impact unique or special habitat features.
Alt. B						The protection and management of unique or special habitat features would be guided by the FPRs. Impacts would be less than significant with application of mitigations similar to C1.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR. Impacts will be beneficial with application of Mitigation 1.
Alt. C2 Nov. 2002 Plan						Similar to C1.
Alt. D						In addition to protections of the FPRs, Alternative D seeks to emulate forest species mix found in late seral/old-growth forest. Enhanced riparian zone width and no or minimal harvest SCAs benefit overall habitat connectivity. FEMAT management for wetland areas.
Alt. E						Similar to Alt. D regarding forest stand species composition and wetland management. Emphasis on old-growth and late seral development will tend to enhance habitat connectivity for species utilizing this type of forest structure.
Alt. F						Alternative seeks to maintain and restore high quality habitat for native flora and fauna and forest stands of a particular age class considered scarce regionally. National Marine Fisheries Service and HCP guidelines for wetland management. Develops water based core areas that link key areas and old-growth groves to enhance habitat connectivity for species utilizing these forest conditions.
Alt. G						Alternative G adopted the protection measures for snags (above) that will ensure the protection of goose pens and old trees with cavities. These special habitat features will not be significantly affected by management under Alternative G.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels:** **(1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1f: Wildlife Communities and Species Habitat Value						
Alt. A	■					Without management, some stands would become denser rendering them less suitable for some species. Wildlife preferring early successional and open habitats would encounter reduced habitat capability over time as the young stands mature. Early successional stands (CWHR class 1) would likely experience the most significant change, followed by the more sparse forest habitats of size class 2 and 3. These stands would become denser and contain larger trees than they do currently. As an example, WHR 2M may become 3D during the life of the plan. However, in the same timeframe, CWHR class 5S are not likely to become 6 under this alternative. Habitat value for species preferring dense stands would increase.
Alt. B			■			Extent of early successional stands may increase and late seral stands may decrease compared to existing conditions and the conditions anticipated under Alternative A. An increase in early seral habitats would benefit a variety of species that prefer these habitat types. On the other hand, a decrease in late seral habitat may negatively affect species that require this type of habitat. These differences may not result in a composition of different species in the short term, but would affect habitat capability as measured by relative abundance.
Alt. C1 May 2002 DFMP			■			Refer to detailed project impacts in the 2005 DEIR. Species habitat value trend similar to Alternative B.
Alt. C2 Nov. 2002 Plan			■			Similar to C1. Species habitat value trend similar to Alternative B.
Alt. D	■					Alternative D would focus on uneven-aged management and the development of late successional habitats in the large riparian protection zones. Increasing the amount of late successional habitats on JDSF would favor species associated with this type. Because clearcutting would not be used under Alternative D, early successional habitat and associated species would be reduced on JDSF over time, but not within the 10 year planning period. Increase in recreational opportunity under this alternative may negatively influence some wildlife species. For example, some bat species are highly susceptible to human intrusion and may abandon a site after being disturbed by humans; food refuse from recreationists may attract corvids that predate Marbled Murrelet nests. Thus, an increase in recreation has the potential to negatively impact wildlife communities on JDSF.
Alt. E	■					Alternative E focuses on the development of late seral forest conditions on JDSF. Like alternatives A and D, the lack of clearcutting and the maturation of stands of early successional habitats would result in the gradual reduction of early successional habitats and associated species over time. Species that require closed canopy forest habitats and late successional forest conditions would be expected to benefit under Alternative E over the next 30 years. Under Alternative E, habitat value for 64 terrestrial vertebrate species is expected to increase and decrease for 130.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. F						Similar to Alternative E focusing on the development of late seral forest conditions across forest and within riparian zones. Under Alternative F, habitat value is expected to increase for 75 terrestrial vertebrate species and decrease for 115 species over the next 30 years.
Alt. G						Similar to Alternative C1, except provides for development of substantially more late seral and older forest habitat area. This change, combined with the reduced use of even-aged management, will reduce the amounts of early successional habitats, relative to Alternative C1.
Impact 1g: Game Species						
Alt. A						The maturation of early successional habitats over time will reduce the amount of available foraging and/or reproductive habitat for several game species. Reduction in acreage of Montane Hardwood Conifer 4M/4D primary factor in habitat trend.
Alt. B						Under this alternative, 8 of 9 game species expected to occur will experience net decline in habitat value over the next 30 years for reasons noted in Alt A.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in 2005 DEIR. Trend in game species habitat value similar to Alt. B.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1 in terms of species and magnitude of change in habitat capability over both planning periods.
Alt. D						Similar to Alternative A. Although these impacts could be considered significant in the long term, they are considered less than significant within the 10 year planning period. Montane Hardwood Conifer 6 increases in the 2030-2060 planning period compensate for decrease in extent of Montane Hardwood Conifer 4M in the Current to 2030 period. Species under this Alternative exhibit generally stable to small declines in habitat capability over the Current to 2030 period.
Alt. E						Similar to Alternative D. Decrease in extent of Montane Hardwood Conifer 4M results in small to modest decline in mule deer and Mourning Dove habitat capability in the first period. Band-tailed Pigeon habitat capability remains stable over both periods. Marked increase in Montane Hardwood Conifer 6 may provide some compensating habitat value. Gray squirrel and black bear exhibit small increase in habitat capability. Greater emphasis on extent of late seral forest conditions will reduce the amount of available foraging, cover and/or reproductive habitat for most game species in the long term..
Alt. F						Similar to Alternative E but late seral forest recruitment less extensive. Increase in acreage of mid seral closed canopy conditions will reduce forage availability. Similar to Alt. E with declining trend in Montane Hardwood Conifer 4M/4D representation and increasing trend in Montane Hardwood Conifer 6 acreage. Net increase in habitat capability for gray squirrel and black bear over both planning periods.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. G			■			Relative to Alternative C1, management under Alternative G will provide increased habitat for game species that prefer older forest structures (such as black bear) and less habitat for species that prefer early seral stages (such as mourning dove and black tail deer). These game species habitat quality changes are small to modest and will not result in a significant impact.
Impact 1h: Lotis Blue Butterfly						
Alt. A		■				Since Alternative A does not allow for timber harvesting or other management activities that may harm individuals or degrade bogs or other potential habitat, implementation of this alternative is not expected to impact lotis blue butterflies directly. However, management directed toward the development of habitat potentially used by this species would not occur.
Alt. B	■					Similar to Alternative C1
Alt. C1 May 2002 DFMP	■					Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan	■					Similar to Alternative C1.
Alt. D		■				Riparian management measures, Pygmy Forest Reserve management, and species-specific management measures for the lotis blue butterfly under Alternative C1 would be the same or greater under Alternative D. However, unlike Alternative C1, no potential habitat would be created under Alternative D.
Alt. E	■					Similar to Alternative D with respect to lotis blue butterflies and their habitat. However, restoration emphasis would provide for creation of habitat.
Alt. F	■					
Alt. G	■					Management under Alternative G will not differ significantly in its effects on lotis blue butterfly as compared with Alternative C1.
Impact 1i: Southern Torrent Salamander and Tailed Frog						
Alt. A			■			Since no timber management would occur under this alternative, no habitat or individuals are expected to be impacted by harvest activities. Canopy cover in riparian habitats and over watercourses would increase and water temperatures are expected to remain similar to or below current conditions. Southern torrent salamanders and tailed frogs are expected to benefit from these conditions in the long term. However, the lack of a Road Management Plan and erosion control measures in this alternative may allow the input of sediment from road failure that could degrade breeding habitat in the short term. Although southern torrent salamanders and tailed frogs are expected to benefit from the lack of harvest, sediment input represents a potential negative impact; these effects are roughly offsetting. A slight increase in habitat capability for both species is expected over the next 30 years under this alternative.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. B				■		Under this alternative, JDSF would continue current management practices in riparian areas adjacent to Class II watercourses, springs and seeps, as described in the FPRs. Although these practices follow current FPRs, they provide less protection than Alternative C1. Road management would follow current FPRs and does not propose a Road Management Plan to further control sediment delivery into watercourses. High level of sediment input could result in the degradation of breeding habitat of these species. Therefore, without additional mitigation to manage roads and prevent road failure in areas not associated with a THP, implementation of Alternative B may result in significant impacts to the breeding habitat of southern torrent salamanders and/or tailed frogs.
Alt. C1 May 2002 DFMP			■			Refer to detailed project impacts in the 2005 DEIR. Sedimentation levels originating from Class III likely higher than under Alternatives A, D, E, F.
Alt. C2 Nov. 2002 Plan			■			Similar to C1.
Alt. D	■					Under Alternative D, JDSF would establish larger WLPZ protection buffers along Class II and III watercourses than the proposed protection under Alternative C1. Like Alternative C1, Alternative D would implement a Road Management Plan to minimize sediment input. These measures are expected to increase the quality and quantity of southern Torrent salamander and tailed frog habitat over time. However, there is still the slight potential for sediment delivery to watercourses from road sediment in some areas that may degrade some potential breeding habitat in the short term. Human impacts could be magnified by the increase in recreation and access expected under this alternative. Nonetheless, the overall impacts of Alternative D are expected to benefit southern Torrent salamanders or tailed frogs. Late seral conditions adjacent to Class IIIs.
Alt. E	■					Under Alternative E, JDSF would follow the same riparian management practices and implement the same road management plan as under Alternative D. However, less timber harvest and recreation would be expected than under Alternative D. The impacts of Alternative E on southern Torrent salamanders and tailed frogs are not expected to adversely affect these species. Increase in Class II and Class III riparian protections similar to Alternative D and management for late seral conditions. Habitat value for both species expected to increase over the next 30 years.
Alt. F	■					Greater protection of Class II and III drainages than Alternative C1 with Aquatic Protection and Aquatic Management Zones, but width of riparian protection zone less than alternatives D or E. Habitat value is expected to increase for both species over the next 30 years. Aquatic Management Zone to be managed to late seral conditions.
Alt. G			■			Management under Alternative G will not differ significantly in its effects on the southern torrent salamander or the tailed frog as compared with Alternative C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1j: Northern Red-legged Frog						
Alt. A		■				Since no harvesting would occur under this alternative, habitat for this species would not be affected. As the habitats mature, the quality of habitat would improve. Habitat quality for this species is expected to remain stable over the next 30 years.
Alt. B			■			Under this alternative, JDSF would continue current management practices in riparian areas adjacent to watercourses, springs and seeps, and ponds, as described in the FPRs. Although these practices follow current FPRs, they provide less protection than Alternative C1. Other factors are similar to those identified for Alternative C1 and C2. Red legged frogs are likely to continue to occur at levels similar to existing conditions. Habitat value for this species outside of the WLPZ is expected to exhibit a small increase over the next 30 years.
Alt. C1 May 2002 DFMP		■				Refer to detailed project impacts in the 2005 DEIR. Habitat value for this species outside of the WLPZ is expected to exhibit a small increase over the next 30 years.
Alt. C2 Nov. 2002 Plan		■				Similar to C1.
Alt. D	■					In riparian areas, Alternative D would provide larger riparian buffers (FEMAT) with more restrictions on management practices along Class I watercourses than Alternative C1. However, timber harvest that promotes late successional habitat could be conducted. Tree retention requirements would improve habitat quality for red-legged frogs. As described for Alternative A, this measure would benefit red-legged frogs by minimizing disturbance of streamside vegetation and benches that red-legged frogs use for foraging and resting. However, the increase in recreation along watercourses could result in increased disturbance to individuals, but not adversely. Because red-legged frogs depend on aquatic habitat to reproduce, the improvement in aquatic habitat conditions expected under Alternative D would benefit red-legged frogs.
Alt. E	■					Management measures for riparian areas would be similar to Alternative D. Upland habitat would remain abundant on JDSF as under Alternative D, except that lands would be managed for the development of late successional habitats. Effects of Alternative E on red-legged frogs would be similar to those described for Alternative D.
Alt. F	■					Similar to Alternative D.
Alt. G		■				Management under Alternative G will not differ significantly in its effects on the northern red-legged frog as compared with Alternative C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1k: Foothill Yellow-legged Frog						
Alt. A			■			Under Alternative A, no harvesting would occur on JDSF and riparian area canopy cover and potentially reduced stream temperature may have a slightly negative effect on habitat quality. The lack of a Road Management Plan and erosion control measures in this alternative may allow the input of sediment from road failure that could degrade breeding habitat quality in the short term. Yellow-legged frogs are known to occur in JDSF and should continue to occur at populations and habitat conditions similar to current levels.
Alt. B			■			Under this alternative, JDSF would continue management practices in riparian areas adjacent to Class I and II watercourses, springs and seeps, and ponds, as described in the FPR. Although these practices follow current FPR, they provide less protection than Alternative C1. Other factors are similar to those identified for Alternative C1.
Alt. C1 May 2002 DFMP		■				Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan		■				Similar to C1.
Alt. D	■					Under Alternative D, JDSF would implement larger riparian buffers (FEMAT) and more harvest restrictions in Class I and II watercourses than under Alternative C1. Increase in canopy cover of riparian areas may have slight negative influence on the availability of basking sites. Alternative D also would implement a Road Management Plan similar to that of Alternative C1. Increase in recreation proposed under this alternative could negatively impact individuals, habitat or their reproductive success. This could result from increased human use of streams and rivers. The degree to which recreational activities will impact individuals is unknown but it is expected to be less than significant. The overall effects of Alternative D are expected to be beneficial.
Alt. E	■					Management measures for riparian areas and sediment control would be the same under Alternative E as under Alternative D. However, Alternative E proposes less of an emphasis on recreation than Alternative D. Additionally, timber harvest would be reduced on JDSF and be focused on the development of late successional habitat.
Alt. F	■					Similar to Alternative D.
Alt. G		■				Management under Alternative G will not differ significantly in its effects on the northwestern pond turtle as compared with Alternative C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1l: Northwestern Pond Turtle						
Alt. A						Alternative A does not propose management activities that would impact northwestern pond turtles or their habitat. Over time, forest stand development may become too dense for suitable pond turtle nesting, resulting in the potential loss of nesting habitat.
Alt. B						Management activities and effects that could impact northwestern pond turtles are the same under Alternative B as under Alternative C1
Alt. C1 May 2002 DFMP						Refer to detailed project impacts and habitat capability modeling limitations applicable to all alternatives in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1.
Alt. D						Management measures that could impact northwestern pond turtle habitat under this Alternative Are similar to those described under Alternative C1. However, the low level of evenaged management may reduce the availability of upland nesting habitat compared to Alternative C1 although at unknown levels. The riparian protection measures of this Alternative are expected to benefit this species by reducing the chance of incidental harm from management activities near upland nest sites and allowing the recruitment of LWD, which is important for basking. Increased recreational activity could negatively impact individuals particularly in ponded or slow moving water environments.
Alt. E						Similar to Alternative A.
Alt. F						Similar to Alternative A.
Alt. G						Management under Alternative G will not differ significantly in its effects on the northwestern pond turtle as compared with Alternative C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels:** **(1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1m: Northern Goshawk						
Alt. A						Alternative A does not propose any management activities that would impact Northern Goshawk habitat. Due to the lack of specific management to advance the development late successional habitat, stands of unsuitable habitat will take longer to develop into suitable Goshawk habitat than under Alternative C1. However, over time, the natural thinning and development of the stand will gradually increase the amount and quality of Goshawk habitat on JDSF, but significant changes are not expected within the life of the DFMP. In fact, some stands that are currently considered Goshawk habitat may temporarily become dense while other stands already in the thinning phase may increase in quality. Goshawks are not known to nest on JDSF and habitat would continue to be provided at levels similar to existing conditions during the life of the DFMP. Net change in habitat capability over the Current to 2030 and 2030-2060 periods was stable.
Alt. B						The impacts to Northern Goshawk habitat under Alternative B are expected to be greater than the impacts of Alternative C1 or C2. This is because Alternative B focuses more on evenaged management that is expected to remove more habitat than the management practices proposed under Alternative C1 and C2. Additionally, the protection of nest sites will be completed according to current FPR (5 acre minimum protection buffer), which are considered too small to adequately protect nest sites. Reynolds (1983) recommends an uncut buffer of approximately 20 acres. This alternative results in the least amount of fully suitable habitat in 2030. Net change in habitat capability over the Current to 2030 and 2030-2060 periods was -22% and +7% respectively. Impacts are expected to be less than significant with the development of a mitigation measure addressing foraging, cover, and nesting habitat requirements and spatial arrangement for any goshawk territory identified over the term of the project. R.T. Reynolds. 1993. Management of Western coniferous forest habitat for nesting accipiter hawks. General Technical Report RM-102. USDA Forest Service.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR. Net change in habitat capability over the Current to 2030 and 2030-2060 periods was -15% and -13% respectively. Survey and habitat provisions of identified Goshawk territories reduce to less than significant the modest decrease in habitat capability over the Current to 2030 and 2030-2060 time periods.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1. Net change in habitat capability over the Current to 2030 and 2030-2060 periods were modest declines of -10 and -11% respectively.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels:** **(1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. D						With the exception of the limited evenaged management, Alternative D is similar to Alternative C1 with respect to Goshawks nest site protection. Through the use of uneven-aged management and the advancement of late successional habitat, habitat quality and quantity is expected to increase under Alternative D in the long and short term. However, the lack of silvicultural methods that create small openings in the stand may reduce the overall quality of JDSF in the long term, but not within the life of the DFMP. Although Northern Goshawks prefer late successional habitats, small openings, meadows, or woodlands are necessary for providing foraging opportunities. Increased recreation on JDSF could result in an increase of human caused disturbance to nesting Goshawks. Although unlikely, this has the potential to impact the breeding success of Goshawks should they occur on JDSF. Net change in habitat capability over the Current to 2030 and 2030-2060 periods was +3% and +3% respectively.
Alt. E						Under Alternative E, JDSF would follow the same general management practices as under Alternative D. However, recreation would be less of an emphasis than Alternative D. Human disturbances are not expected to increase and habitat is expected to improve in terms quality and quantity, Alternative E should be of slightly greater benefit to Northern Goshawks. Net change in habitat capability over the Current to 2030 and 2030-2060 periods was stable.
Alt. F						Similar to Alternative D. Net change in habitat capability over the Current to 2030 (+3%) and 2030-2060 periods (0% change) is expected to be essentially stable.
Alt. G						Management under Alternative G will not differ significantly in its effects on the northern goshawk as compared with Alternative C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1n: Cooper's Hawk						
Alt. A						Alternative A does not propose the removal or recruitment of Cooper's Hawk habitat. As the younger forested habitats on JDSF mature, they will increase in quality for Cooper's Hawks in the short term. Reduction in occurrence of forest openings over time does not favor Cooper's Hawk foraging opportunity. Nonetheless, Alternative A is expected to maintain habitat for Cooper's Hawks over the next 30 years.
Alt. B						Although Alternative B proposes greater emphasis on evenaged management, potential impacts to Cooper's Hawk habitat are expected to be similar to those under Alternative C1. Reduction in hardwood/conifer mix acreage under Alternative B would decrease the quality of habitat for Cooper's Hawks over the next 30 years. Habitat capability is expected to decline by approximately 13% over the Current to 2030 period. This impact could be mitigated by implementing hardwood management measures similar to Alternative C1.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR. Overall impacts are considered to be less than significant (-11% in habitat capability Current to 2030) given survey and nest site protections.
Alt. C2 Nov. 2002 Plan						Similar to C1 (-8% change in habitat capability Current to 2030).
Alt. D						Small group selection and single tree selection could enhance habitat value as late seral conditions increase. Since Cooper's Hawks are known to successfully nest in areas of high human use, the impacts of increased recreation are not expected to adversely impact Cooper's Hawks. Habitat capability is essentially stable over the Current to 2030 period.
Alt. E						Under Alternative E, JDSF would follow the same general management practices as under Alternative D with the exception of no even-aged management prescriptions for forest opening creation. Habitat capability is expected to remain stable.
Alt. F						Similar to Alternative D. Habitat capability is essentially stable over the Current to 2030 and 2030-2060 periods.
Alt. G						Management under Alternative G will not differ significantly in its effects on the Cooper's Hawk as compared with Alternatives C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1o: Golden Eagle						
Alt. A						As early successional and open to sparse canopy habitats mature, potential Golden Eagle foraging habitat will decline over time. Lack of cliff habitat on JDSF limits potential nesting structure to individual large trees. Golden Eagles are not known to use JDSF for nesting. Habitat capability is expected to remain stable over both time periods.
Alt. B						Take will be avoided through the protection of nest sites consistent with current FPRs as in Alternative C1. Under Alternative B, forest stands that provide nesting opportunities for Golden Eagles are likely to decrease compared to existing conditions resulting in a modest to marked decline in habitat capability rating (-11% Current to 2030 and -26% 2030-2060). However, evenaged management application will maintain foraging habitat at levels similar to existing conditions. Ample large tree nest site opportunity would remain and result in a less than significant effect overall.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR. Nest site survey and habitat protections are expected to reduce impacts to a less than significant level should the species occupy JDSF. Marked decline in the Current to 2030 period (-27%) is followed by modest increase (+10%) in the 2030-2060 period.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1. Greater emphasis on late seral forest recruitment results in reduced impact to potential nesting habitat value than under Alternative C1.
Alt. D						Similar to Alternative C1. Take would be avoided through the protection of nest sites. Although the risk is considered minimal because of the lack of large expanses of suitable foraging habitat, the increase in recreation could disturb nesting Golden Eagles, should they nest on JDSF. Golden Eagles are not known to use JDSF and amount and quality of nesting habitat is expected to remain stable or improve over time. Impacts are expected to be less than significant.
Alt. E						Take is avoided through the protection of nest sites. Amount and quality of foraging habitat will decline over time under Alternative E as late seral areas are developed; impacts are expected to be less than significant overall with potential improvement in habitat capability in the 2030-2060 period (+6%).
Alt. F						Similar to Alternative E in terms of overall change in habitat capability.
Alt. G						Alternative G provides for the establishment of an Older Forest Structure Zone and an additional late seral development area where snags will be recruited and maintained. In addition, measures have been adopted in Alternative G to establish goals, recruitment, and monitoring for snags and to ensure protection of snags in harvest areas where feasible.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1p: Bald Eagle						
Alt. A						Alternative A does not propose the removal, degradation, or improvement of potential Bald Eagle nesting, winter roosting, or foraging habitat and is not expected to impact Bald Eagles. Habitat capability is expected to remain stable in the Current to 2030 period and exhibit a marked increase in the 2030-2060 period.
Alt. B						The potential impacts to nesting, roosting, and foraging Bald Eagles under Alternative B generally exceed those of Alternative C1. Like Alternative C1, Alternative B proposes to protect existing old-growth groves, however, unoccupied large residuals and unidentified patches of old-growth could be harvested. This represents the loss of potential nesting habitat for this species. Take will be avoided through the protection of nest sites and winter roosts consistent with current FPRs and/or through consultation with CDFG or the USFWS. Although some unoccupied potential nesting habitat may be harvested, numerous potential nest/roost trees will not be harvested and all nest /roost sites will be protected. Impacts of Alternative B on potential Bald Eagle nesting habitat is expected to be similar to that expected under Alternative C1, but is still not likely to significantly impact Bald Eagle nesting or other life requisites.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Similar to C1
Alt. D						Alternative D will likely result in greater levels of potential nest sites/roost habitat than Alternative C1. However, the potential exists for increased recreation associated disturbance to nesting or wintering Bald Eagles. These impacts are expected to be minimal and ultimately will be determined on a site specific basis. Take will be avoided through the protection of nest sites and winter roosts consistent with current FPRs and/or through consultation with CDFG or the USFWS. Since Bald Eagle nest and roost sites will be protected and increased recreation is generally not expected to have adverse effects, no impacts are anticipated. Overall habitat capability is expected to remain stable In the Current to 2030 period and exhibit a modest increase in the 2030-2060 period (+18%).

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. E						Alternative E proposes to protect all old-growth residuals and snags, unless they pose a safety hazard. As described for Alternative C1, take will be avoided through the protection of nest sites and winter roosts consistent with current FPRs and/or through consultation with CDFG or the USFWS. Since no potential nesting habitat is expected to be removed and nest and roost sites will be protected and developed over time, no impacts to Bald Eagles are expected. Increased management for late seral representation on the forest will increase the number of possible nest sites or conditions suitable for winter roosts over the longer term and have a beneficial effect on habitat over the long term.
Alt. F						Similar to Alternative E.
Alt. G						In addition to the C1 measures, Alternative G adopted the protection measures for snags in harvest areas and contributes toward the development and retention of late seral habitat and stands with older forest structure, favored habitat for bald eagles.
Impact 1q: Osprey						
Alt. A						Alternative A does not propose management activities that would measurably influence potential or actual Osprey habitat. Therefore, Alternative A is not expected to impact Ospreys.
Alt. B						Although Alternative B proposes to protect existing old-growth groves, large residuals could be harvested. This represents the loss of potential nesting habitat for this species. Like Alternative C1, take will be avoided under Alternative B through the protection of nest sites consistent with current FPRs and/or through consultation with CDFG. This will include, at minimum, the protection of the nest tree and buffer, and silvicultural and noise disturbance buffers. Although some unoccupied potential habitat may be harvested numerous potential nest sites will be available and all nest sites will be protected. Therefore, implementation of Alternative B is not expected to significantly impact Osprey.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Similar to C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. D						Alternative D is largely the same as Alternative C1 with respect to occupied Osprey nesting habitat and nest site protections. Alternative D has the potential for increased disturbance to nesting birds from higher recreation levels. However, the impacts of increased type and amount of recreation are expected to be minimal given Osprey tolerance for human activity. Acreage potentially recruited as late seral has a positive effect on nest site opportunities. As described for Alternative C1, take will be avoided through the protection of nest sites consistent with current FPRs and/or through consultation with CDFG. Since Osprey nest sites will be protected and recreation is not expected to have significant adverse impacts on nesting Osprey, no impacts from Alternative D are expected
Alt. E						Alternative E proposes to protect all old-growth residuals and snags, unless they pose a safety hazard and recruit late seral forest conditions forest wide. As described for Alternative C1, take will be avoided under Alternative E through the protection of nest sites consistent with current FPR and/or through consultation with CDFG.
Alt. F						Similar to Alternative E.
Alt. G						Management under Alternative G will not differ significantly in its effects on the osprey as compared with Alternatives C1. However, measures to protect snags and develop additional late seral habitat under Alternative G will improve habitat for osprey.
Impact 1r: Peregrine Falcon						
Alt. A						No suitable cliff nesting habitat exists on JDSF. However, large trees are present and represent atypical nesting habitat for this species. Alternative A does not propose management activities that would impact or disturb typical Peregrine Falcon nesting or foraging habitat.
Alt. B						Similar to Alternative C1.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1.
Alt. D						Similar to Alternative C1. Given minimal level of evenaged management, low quality foraging habitat in the form of forest openings will diminish as the stands mature, but these losses are not expected to be significant. Due to the lack of typical nesting habitat on JDSF, the likelihood of recreation causing impacts to nesting individuals is considered minimal. Although the incremental loss of foraging habitat is expected to occur over the long term, impacts to Peregrine Falcons are expected to be less than significant.
Alt. E						Similar to Alternative C1/D.
Alt. F						Similar to Alternative C1/D.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. G						Management under Alternative G will not differ significantly in its effects on the peregrine falcon as compared with Alternative C1.
Impact 1s: Marbled Murrelet						
Alt. A						Alternative A does not propose any management activities that would remove potential murrelet nesting habitat or directly take the species. Since nesting murrelets would be protected from noise and disturbing activities, implementation of Alternative A is not likely to adversely impact nesting murrelets. Forest stand management as a means of speeding the recruitment of potentially occupied murrelet nesting habitat would not occur. Recruitment of habitat with or without management may not keep pace with the habitat recovery needs to sustain murrelet populations.
Alt. B						Like Alternative C1, the take of nesting Marbled Murrelets is unlikely under Alternative B given that surveys will be completed prior to commencing operations in or near potential habitat. Alternative B provides for the protection of the 459 acres of old-growth present on JDSF, but unlike Alternative C1, it does not protect all unoccupied remnant old-growth patches and residual trees or propose management to advance the development of late successional habitat. Current distribution of old-growth may not be conducive to murrelet occupancy. Thus, depending on the characteristics of the stand, patch, or tree, there is potential for loss of unoccupied habitat. Little or no contribution would be made to habitat and species recovery. Impacts could be reduced to less than significant with the application of management measures similar to Alternative C1, including the Contribution to Recovery of Marbled Murrelet Habitat management measure.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts and proposed management measures in the 2005 DEIR. Harvest of spatially valuable recruitment habitat can minimize future occupancy without proposed management measures to develop, beyond the project term, suitable nesting habitat. Implementation of the Contribution to Recovery of Marbled Murrelet Habitat management measure will result in increased Murrelet habitat over the long term.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1 with increase in the area (primarily in the vicinity of upper Russian Gulch, lower Big River, and upper Thompson Gulch) dedicated to development of late seral forest conditions specifically with the intent of Murrelet habitat recruitment.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. D				■		Under Alternative D, JDSF would implement the same species (not habitat) protection measures for Marbled Murrelets as Alternative C1, except for the Contribution to Recovery of Marbled Murrelet Habitat management measure. Increase in width of riparian protection zones is expected to have minimal influence on habitat recruitment given edge influences. The anticipated increase in human activity and associated increase in food availability for corvids will likely result in increases in jays and ravens and thus indirectly adversely impact murrelet populations by increasing mortality. This impact could be mitigated by not encouraging recreation activities (e.g., not providing or closing trails, posting areas as off limits) in areas of suitable murrelet habitat. Incorporating Marbled Murrelet Habitat management measures as a mitigation would likely result in a beneficial effect over the longer term.
Alt. E	■					Under Alternative E, JDSF would implement the same species protection measures for Marbled Murrelets as Alternative C1. Late seral habitat conditions would be developed across the forest where likelihood of success was greatest but without specifically addressing the spatial requirements of murrelets. However, implementation of this alternative is expected to have a slightly beneficial influence on availability of murrelet habitat over the long term.
Alt. F	■					Similar to Alternative E except increased emphasis on the recruitment of murrelet habitat in areas considered most likely to be occupied on the western portion of the forest. Creates a 3,498 acre Marbled Murrelet Recovery and Demonstration area to recruit high quality potential nesting habitat. Alternative includes human disturbance and adjacent habitat management to minimize disturbance and loss to corvids.
Alt. G			■			In addition to the measures in C1, Alternative G proposes changes in management within JDSF for the purpose of developing and protecting habitat for the marbled murrelet, including an additional late seral development area, Older Forest Structure Zone, and the protection of the old growth stands with the creation of buffers that limit adjacent management.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1t: Northern Spotted Owl						
Alt. A						Alternative A does not propose any management activities that would alter Spotted Owl habitat. However, as early successional habitats mature, prey populations are likely to decrease over time, but not within the 10 year planning period. Implementation of Alternative A is not likely to adversely impact Spotted Owls and habitat capability is expected to remain stable.
Alt. B						Like Alternative C1, take of Northern Spotted Owls would be unlikely under Alternative B due to FPR nest site protection requirements and minimum habitat retention standards. Alternative B also proposes the protection of the 459 acres of old growth. However, outside of these areas, forest management activities would not be specifically undertaken for Spotted Owls and suitable, unoccupied, Spotted Owl habitat could be harvested. Increase in prey populations could be expected under this alternative. Owl populations are likely to continue to exist at levels similar to existing conditions under Alternative B. Impacts of Alternative B are expected to be less than significant.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1.
Alt. D						Alternative D is similar to Alternative C1 with regard to the protection of nesting Northern Spotted Owls. However, the larger WLPZ and focus on unevenaged management likely will provide greater quantities of nesting and roosting habitat. Decrease in foraging habitat quality and extent can be expected over the longer term.
Alt. E						Alternative E is similar to Alternative C1 with respect to Spotted Owl habitat and the protection of nest sites. Additional potential nesting habitat is created over time with increases in late seral forest development. Decrease in foraging habitat quality and extent can be expected over the longer term.
Alt. F						Similar to Alternative E. Late seral recruitment will likely enhance nesting and cover opportunities with some decrease in incidence of woodrat prey. Decrease in foraging habitat quality and extent can be expected over the longer term.
Alt. G						Increases in late seral habitat and stands with older forest structure proposed in Alternative G will be beneficial to northern spotted owls. However, a decrease in evenaged management, as proposed in Alternative G, may reduce populations of dusky footed woodrat, an important prey species for the owls, on a site-specific basis.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1u: Vaux's Swift and Purple Martin						
Alt. A						Alternative A does not propose management that will impact Purple Martin or Vaux's Swift habitat. Over time, the lack of timber management will allow trees to encroach on existing snags rendering them less suitable for Purple Martins. Likelihood of recruitment of additional snags is enhanced through retention of tree mortality. Vaux's Swift experience a slight increase in habitat capability in the current to 2030 period.
Alt. B						Alternative B does not provide specific protection of snags and old-growth remnants, other than meeting the requirements of the FPRs and retaining existing old-growth groves. The removal of large snags and old-growth remnants on JDSF represents the loss of potential habitat for these species and could preclude nesting on JDSF in the future. This impact could be mitigated by retaining these habitat features through measures similar to those in the DFMP and Mitigation 1.
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR. Apply Mitigation 1 to enhance nesting opportunity.
Alt. C2 Nov. 2002 Plan						Similar to alternative C1
Alt. D						Under Alternative D, JDSF would follow the same management practices as they pertain to snags as under Alternative C1. However, increased recreation could increase likelihood of disturbance to nesting Vaux's Swifts and/or Purple Martins although this is not expected to be significant. Increased recruitment of late seral forest conditions would enhance large tree cavity nesting opportunity for these species.
Alt. E						Greater emphasis on late seral forest development forest wide and snag retention is expected to benefit Vaux's Swifts or Purple Martins.
Alt. F						Similar to Alternative E.
Alt. G						Alternative G provides for the establishment of an Older Forest Structure Zone and additional late seral development areas where snags will be recruited and maintained. In addition, measures have been adopted in Alternative G to establish goals, recruitment, and monitoring for snags, and to protect snags in harvest areas where feasible. In combination, these measures will protect important habitat elements for these species.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1v: Yellow Warbler						
Alt. A						Alternative A does not propose management that will impact or degrade upland or riparian Yellow Warbler habitat. Over time, the early successional habitats (e.g., 3P, 4P, and 4S) will mature and become too dense or mature to provide Yellow Warbler foraging/understory nesting habitat.
Alt. B						Alternative B has less riparian area protection than C1. Increased level of evenaged management in upland areas would enhance shrub representation and habitat value. However, Alternative B would provide much less of the hardwood/conifer mix habitat utilized by this species in upland areas. Mitigation to increase hardwood retention in sparse to open canopy stands would reduce the impact associated with this alternative to less than significant. Modeled habitat capability resulted in marked declines in the Current to 2030 (-33%) and 2030-2060 periods (-24%).
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR.
Alt. C2 Nov. 2002 Plan						Similar to Alt. C1
Alt. D						Alternative D will implement larger WLPZ protection zones, although maintenance of obligate riparian shrub species extent is likely similar across all alternatives, and manage hardwoods as a significant component of the stand. Although long-lasting early successional habitats are not expected to be created under this alternative, the opening of younger stands will improve foraging conditions for Yellow Warblers in upland areas. Thinning of dense habitats and minimizing edge creation will also contribute to the general maintenance of Yellow Warbler habitat capability over the longer term.
Alt. E						The focus of Alternative E is on the development of late successional habitat. In the long run, this will degrade upland habitat conditions for Yellow Warblers especially in the first period, but the opening up of younger stands to hasten development of late seral characteristics is expected to improve upland habitat conditions in the short term. Overall, the thinning of dense habitats and minimization of edge creation are expected to maintain upland Yellow Warbler habitat capability over the Current to 2060 period. Similar to Alternative D relative to riparian zone habitat and provision.
Alt. F						Similar to Alternative D
Alt. G						Management under Alternative G will not differ significantly in its effects on the yellow warbler as compared with Alternatives C1.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels:** **(1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1w: Sonoma Red Tree Vole						
Alt. A						Alternative A does not propose any management activities that would affect red tree vole habitat. In time, many of the young-growth conifers stands not currently classified as red tree vole habitat will develop into suitable habitat for this species and connectivity of habitat is expected to increase. Change in habitat capability for the Current to 2030 and 2030-2060 periods increase slightly or are stable.
Alt. B						The impacts to red tree vole habitat under Alternative B are expected to be greater than the impacts of Alternative C1 given a greater focus on even aged management. Unlike Alternative C1, Alternative B does not propose any specific conservation strategies for red tree voles, or management designed to advance the development of late successional habitat. Modeled change in habitat capability shows a slight decline in the Current to 2030 period (-5%).
Alt. C1 May 2002 DFMP						Refer to detailed project impacts in the 2005 DEIR. Habitat capability remains stable to a slight decline over the Current to 2030 period and improves in the second period.
Alt. C2 Nov. 2002 Plan						Similar to Alternative C1 although a greater decline in habitat capability in the first period (-8%) improving in the second period
Alt. D						Even-aged management would be very limited under this Alternative and all identified red tree vole trees would be retained. This alternative is not expected to remove or significantly degrade occupied habitat in the short term and is expected to improve overall habitat conditions for red tree voles in the long term with recruitment of additional habitat. Modeled habitat capability values increase slightly (+4%) in the Current to 2030 period and are stable (+3%) in the 2030-2060 period.
Alt. E						Alternative E is similar to Alternative D. However, additional Douglas-fir acreage in a late seral condition is expected over time across the forest which would likely increase quality of nesting and dispersal habitat. Modeled habitat capability values exhibit a slight to moderate increase in habitat capability in the Current to 2030 period (+4%) and stable in the 2030-2060 period.
Alt. F						Similar to Alternative D. Modeled habitat capability values remain stable to slightly increasing over the Current to 2030 and 2030 – 2060 periods period.
Alt. G						Alternative G includes measures that contribute to the maintenance and development of late successional, closed canopied forest conditions that are important to this species. In addition, dispersal corridors and habitat connectivity will be increased through the establishment of an Older Forest Structure Zone that connects many of the old growth groves and late-seral development areas. These changes in management from that proposed in Alternative C1 will be beneficial and overall the alternative will have no impact on red tree voles.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 1x: Pacific Fisher						
Alt. A	■					Since no timber harvest or other management activities would occur on JDSF under Alternative A, Pacific fisher habitat would not be impacted or degraded. Management activities that enhance or advance the development of late successional habitat would not be conducted under this alternative. Although the development of late successional habitat will take more time under this alternative, Pacific fisher habitat is expected to improve with increase in extent of moderate to dense canopy closure conditions. Modeled change in habitat capability for the Current to 2030 period shows a stable habitat condition and slight increase of 5% in the 2030-2060
Alt. B				■		Impacts to potential Pacific fisher habitat under Alternative B are expected to be greater than the impacts of Alternative C1, given a greater emphasis on even aged management and conversion of hardwood to conifer. Non-spatial habitat capability modeling shows a marked decrease in the Current to 2030 period (-11%) given reduction in extent of Montane Hardwood Conifer and late seral forest followed by an increase of 20% in the 2030-2060 period principally as a result of increase in acreage of mid seral redwood and Douglas-fir of moderate to dense canopy closure. Alternative B does not propose any specific conservation strategies, snag recruitment, or mitigation designed to advance the development of late successional habitat with a hardwood component. No specific direction or consideration to enhance connectivity of habitat types. Mitigation measures that address these habitat conditions would likely reduce impacts to a less than significant level.
Alt. C1 May 2002 DFMP			■			Refer to detailed project impacts in the 2005 DEIR. Modeled change in habitat capability exhibits a slight decrease (-7%) in the Current to 2030 period but and increase in (+8%) the 2030 to 2060 period.
Alt. C2 Nov. 2002 Plan			■			Similar to Alternative C1 but additional acreage is managed toward a late seral forest condition. Change in habitat capability shows a slight decrease (-7%) in the Current to 2030 period but increase +8% in the 2030 to 2060 period.
Alt. D	■					The effects of Alternative D are expected to be similar to those of Alternative A. However, Alternative D allows management that enhances and/or advances the development of late successional habitats. Large riparian buffers and primarily uneven-aged management silvicultural prescriptions would increase the amount of habitat for this species. The management of hardwoods proposed in this alternative would also markedly benefit fishers. However, the population and distribution of many important prey species may decrease as the early successional stands mature. Natural disturbances, such as wind throw and fire, may create early successional habitats, but the magnitude and timing of these events are unpredictable. Since these animals tend to avoid humans, the focus on recreation under this alternative may have a negative affect on Pacific fishers, should they occur on JDSF. Management activities proposed under Alternative D would increase the amount and quality of Pacific fisher habitat (+4% in the Current to 2030 period and 2030 to 2060 period (+7%)).

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. E						Under Alternative E, JDSF would follow the same general management practices as under Alternative D. Old-growth/late seral development is emphasized and would promote connectivity of optimal habitat conditions. The likelihood of human disturbance as a factor decreasing habitat value would be less under Alternative E. Hardwoods as a component of the landscape would be less under this alternative than Alternative D. Habitat capability is stable in the Current to 2030 period and increases slightly (+5%) in the 2030 to 2060 period.
Alt. F						Similar to Alternative E. Alternative F emphasizes the development of contiguous late seral/old growth forest conditions. A watercourse-based linkage is developed to provide connectivity to key areas and across watershed boundaries that would be a benefit to Pacific fisher habitat value. Hardwood extent would be similar to Alternative E. Habitat capability increases (+4%) in the Current to 2030 period and +5% in the 2030 to 2060 period.
Alt. G						Alternative G includes measures that contribute to the maintenance and development of late successional, closed canopied forest conditions that are important to Pacific fishers. In addition, dispersal corridors and habitat connectivity will be increased through the establishment of an Older Forest Structure Zone that connects many of the old growth groves and late-seral development areas. These changes in management from that proposed in Alternative C1 will be beneficial in the formation of additional desirable habitat.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 2: Reduce the number or restrict the range of a rare or endangered animal.						
Alt. A						Management activities that would impact the range or number of sensitive species would not occur. Conversely, forest stand management as a means of speeding the recruitment of potentially occupied habitat to the benefit of sensitive species would not occur.
Alt. B						Lack of protection for remnant old-growth patches and individual trees or proposed management to recruit late seral habitat conditions will negatively influence certain species of concern. Implementation of Additional Management Measures described in the 2005 DEIR (section VII.6.6.4) and watercourse and late seral forest protections as in Alternative C1 would likely reduce associated impacts to a less than significant level.
Alt. C1 May 2002 DFMP						Implementation of aquatic and terrestrial wildlife protection measures described, control of sediment as an influence on aquatic wildlife species and application of Mitigation 1 to provide snag habitat will likely markedly reduce associated impacts and result in a less than significant or beneficial effect.
Alt. C2 Nov. 2002 Plan						Similar to Alt. C1.
Alt. D						Increase in recreation infrastructure and expected level of public use may negatively affect certain sensitive species such as the Marbled Murrelet and other species potentially occupying JDSF. Change in habitat capability is generally stable to positive or beneficial for species of concern sans potential disturbance related species impacts.
Alt. E						Increase in late seral habitat conditions, road management, and WLPZ protections (aquatic wildlife species) will generally increase habitat availability and quality for sensitive wildlife species.
Alt. F						Similar to Alt. E
Alt. G						Changes in management proposed in Alternative G provide for the establishment of an Older Forest Structure Zone and an additional late seral development area where snags will be recruited and maintained. In addition, measures have been adopted in Alternative G to establish goals, recruitment, and monitoring for snags, and to ensure protection of snags within timber harvest areas. In combination, these measures will protect most snags for these species and have reduced this effect to less than significant.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels:** **(1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Impact 3: Interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery areas.						
Alt. A			■			Lack of any forest management activities would generally result in no further impact to terrestrial wildlife species movement or reproduction requirements for at least the short-term. Aquatic wildlife species (amphibians) would likely experience negative effects from increased levels of sedimentation from road erosion and crossing failures. Lack of active planning and management to reduce fire risk could result in marked habitat alteration depending on the location of fire start and attendant weather conditions. Lack of late seral forest development would slow recruitment rate and representation of this forest condition.
Alt. B			■			Similar to Alternative A for the short term relative to forest management. Converse to Alt A., movement and use of nursery areas for species associated with early stages of forest development would likely be enhanced over the longer term. Tree species diversity would be reduced.
Alt. C1 May 2002 DFMP				■		Increased extent of late seral forest conditions over the long-term and further development of riparian forest condition across the range of stream classes will enhance movement and corridor opportunities. Improvement in habitat conditions for certain late seral forest associated species of concern will also enhance movement and reproductive habitat for the more common species associated with these forest conditions. With application of Mitigation 1, overall effects will be beneficial.
Alt. C2 Nov. 2002 Plan				■		Similar to Alt. C1.
Alt. D			■			Increased levels of expected recreational use and associated level of disturbance would likely result in heightened levels of disturbance to certain areas used for reproduction and of high public interest. Species particularly sensitive to human disturbance or increase in potential predator populations as a result of recreational use (Marbled Murrelet) could be negatively affected. Emphasis on uneven aged management and strengthened riparian zone and hardwood management are compensating features of this alternative.
Alt. E	■					Similar to Alternative C1. Emphasis on late seral forest development and uneven aged management will enhance habitat quality for species utilizing resultant forest conditions over the longer term.
Alt. F	■					Similar to C1 and E, Alternative F includes specific direction to establish contiguous older forest habitat and a watercourse based linkage of key areas.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. G	■					Alternative C1 identified impacts to snag dependent species as a potentially significant effect requiring mitigation. Changes in management proposed in Alternative G provide for the establishment of an Older Forest Structure Zone and an additional late seral development area where snags will be recruited and maintained. In addition, measures have been adopted in Alternative G to ensure protection of snags within timber harvest areas. In addition, dispersal corridors and habitat connectivity will be increased through the establishment of the Older Forest Structure Zone that connects many of the old growth groves and late-seral development areas. In combination, these measures will protect most snags for these species and improve connectivity.
Impact 4: Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), or other approved local, regional, or State habitat conservation plan related to a wildlife resource.						
Alt. A		■				No alternative will conflict with the provisions of an HCP or other approved local, regional or State habitat conservation plan.
Alt. B		■				
Alt. C1 May 2002 DFMP		■				
Alt. C2 Nov. 2002 Plan		■				
Alt. D		■				
Alt. E		■				
Alt. F		■				
Alt. G		■				
Impact 5: Cause a wildlife population to drop below self-sustaining levels or threaten to eliminate an animal community.						
Alt. A		■				Management activities that would impact the range or number of sensitive species would not occur. Conversely, forest stand management as a means of speeding the recruitment of potentially occupied habitat to the benefit of sensitive species would not occur. Net change in habitat capability for species of concern generally positive although likely protracted over time.
Alt. B				■		Lack of protection for remnant old-growth patches or proposed management to recruit late seral habitat conditions will negatively influence certain species of concern utilizing these habitat conditions. Lack of Road Management Plan, LWD recruitment measures or enhanced WLPZ management could result in increased stream temperature and sediment levels and negative effect on sustainability of certain aquatic wildlife species. These measures could be implemented as mitigations to reduce impacts to less than significant.

Table III.10. Comparison of Wildlife-Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	1	2	3	4	5	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant -Mitigation Not Feasible**
Alt. C1 May 2002 DFMP			■			The DFMP provides for a variety of habitats, including old-growth and late successional habitats, riparian, and uneven and even-aged stands. Management for hardwoods and other key elements will maintain or improve most key habitat elements under this alternative. The overall effects of the proposed action on the wildlife communities on JDSF, including candidate, sensitive, or special status species, game species, Neotropical migratory birds, or other species that occur, would not threaten to eliminate an animal community and are not expected to cause a wildlife population to drop below self-sustaining levels. Proposed management measures for the benefit of Marbled Murrelet habitat recruitment and sediment control (Accelerated Road Management Plan, LWD and WLPZ management) will benefit aquatic wildlife.
Alt. C2 Nov. 2002 Plan			■			Similar to C1.
Alt. D				■		Increase in recreation infrastructure and expected level of public use may negatively affect certain sensitive species such as the Marbled Murrelet and other species potentially occupying JDSF. Change in habitat capability over time for species of concern is generally positive if the level of human disturbance is reduced. Managing location and timing of recreational activity may effectively mitigate to less than significant some forms of disturbance and indirect impacts.
Alt. E	■					Increase in late seral habitat conditions, connectivity of late seral forest types, road management, and WLPZ enhancements will generally increase habitat availability and quality for sensitive wildlife species. Reduction in extent of early seral forest conditions could result in decreased foraging opportunity for some sensitive species (Northern Spotted Owl) over time.
Alt. F	■					Similar to Alt. E
Alt. G			■			Management under Alternative G will not differ significantly as compared with Alternatives C1 nor lead to a significant drop in or threaten a wildlife population or community

7. GEOLOGY AND SOILS

Changes in Management under Alternative G Affecting Geology and Soils

Management of JDSF under Alternative G will differ somewhat from management under Alternative C1 (May 2002 DFMP) as it relates to geology and soils. Those changes, in goals and objectives and management direction, are described below.

Changes to Alternative C1 Goals and Objectives

Alternative G makes changes to the Goals and Objectives under Alternative C1. These include:

Forest Restoration is moved to Goal #2 and is modified to read:

> Work towards ~~achieving a balanced mix of forest structures and attributes in order to enhance~~ active restoration by managing the Forest to promote and enhance forest health and productivity.

Changes in Alternative C1 Specific Management Actions

Alternative G has adopted various changes in management and incorporated numerous mitigation measures that further reduce geological effects or soil movement. These include:

Older Forest Structure Zone - Alternative G adds a contiguous Older Forest Structure Zone area of 6,803 acres, extending across the Forest from west to east and north to south (see Map Figure 1). Management of the Older Forest Structure Zone for the development and maintenance of older forest structure will reduce ground disturbance and opportunities for geological effects and soil movement to occur.

Late Seral Habitat - The area devoted to development of late-seral forest habitat has been increased by 1,549 acres in Russian Gulch/Lower Big River under Alternative G. This change represents a significant increase in the portion of the forest were less ground disturbance due to forest management activities will occur.

Even-aged Management - Alternative G reduces the potential extent of even-aged management from 29 percent to 26 percent (Table II.2), as well as the rate at which even-aged management may be conducted. This change is likely to represent a small to modest increase in environmental protection, due to the fact that even-aged management may produce a greater impact upon both watershed resources and forest vegetation than uneven-aged management.

Initial Implementation Period Harvest Limitations - Special harvest limitations have been established, and are expected to remain in place for up to a three-year initial

implementation period, while advisory entities consider JDSF management and make recommendations to the Department and the Board for possible modifications of the management plan. The interim harvest standards generally maintain or reduce the level of proposed harvest, when compared to the harvest prescriptions that were designated under Alternative C1. The intent of the interim standards is to avoid changes within individual harvest areas that will preclude future management options. The interim standards limit harvest intensity by setting targets for basal area retention and average stem size. Post-harvest conifer stocking (basal area) levels will be approximately 70 percent of pre-harvest levels, and average tree size as determined by quadratic mean stem diameter will be approximately equal to or greater than pre-harvest levels. This equates to a relatively light stand thinning or selection harvest. These interim measures will protect and enhance aesthetics during the up to three-year review of the Plan.

Rate of Harvest – The management of JDSF according to the provisions set out in Alternative G is expected to reduce average annual harvest from 31 million board feet per year under Alternative C1 to approximately 20 million board feet per year during the term of the management plan. A reduction in annual harvest may contribute to a reduction in the level of soil disturbance and potential for geological effects.

Buffers - The Late Seral Development Areas, Older Forest Structure Zone, and old-growth grove reserves will receive special silvicultural management zone buffers when THPs are adjacent. No even-aged silvicultural systems may be used within 300 feet, and only single tree/cluster selection or thinning may be used within the first 100 feet adjacent to these areas. The buffers proposed under Alternative G will reduce the frequency and intensity of operations within these management zones as compared with management proposed under Alternative C1.

Advisory Bodies – Provisions have been established under Alternative G for the utilization of advisory entities to consider the management of the Forest and to advise the Department and the Board concerning the long-term management of JDSF. These entities will likely consider the effects of forest management activities on geology and soils and recommend future management that enhances and protects those resources.

Mitigations from Alternative C1 – The mitigation in the 2005 DEIR that addressed potential impacts to aesthetics by Alternative C1 has been fully incorporated into Alternative G:

> Use CGS-compiled landslide maps (Short and Spittler 2002a; Manson et al. 2001; Braun et al. 2005) and relative landslide potential maps [Short and Spittler 2002b; Parker 2001; Braun and Short 2005] to (a) identify areas of potential instability during THP preparation, road layout, and other construction activities, and (b)

designate "shallow landslide potential areas" as Special Concern Areas.[3]

Individual Impacts

Impacts 1-3. *Exposure of people or structures to adverse effects involving surface fault rupture, strong seismic shaking, or other seismic-related ground failure.* (Less than Significant)

Neither Alternative G nor any of the other seven alternatives will be adversely impacted by surface fault rupture, strong seismic shaking, or other seismic-related ground failure. The impact will be less than significant.

Mitigation: None required.

Impact 4. *Exposure of people or structures to landslides.* (Less than Significant)

As with the other alternatives Alternative G has the potential to create landslides resulting in impacts to people and structures. However, the following measure has been incorporated into Alternative G and provides the basis for analysis in Alternative G:

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[3] Note: the below are all available on the California Geological Survey website at: http://www.consrv.ca.gov/cgs/thp/maps_pubs.htm

Short W.R. and T.E. Spittler. 2002a. Preliminary map of geologic and geomorphic features related to landsliding, Jackson Demonstration State Forest, Mendocino County, California. Watershed Mapping Series. California Geological Survey, California Department of Conservation, Sacramento.

Manson, M.W., J.A. Sowma-Bawcom, and T.K. Parker. 2001. Geologic and geomorphic features related to landsliding, Noyo River Watershed, Mendocino County, California. Watershed Mapping Series. California Geological Survey, California Department of Conservation, Sacramento.

Braun, D.R., J.M. Curless, K.W. Fresnel, and D.J. McGuire. 2005. Geologic and geomorphic features related to landsliding, Big River watershed, Mendocino County, California. Watershed Mapping Series. California Geological Survey, California Department of Conservation, Sacramento.

Short W.R. and T.E. Spittler. 2002b. Preliminary map of relative landslide potential with geologic and geomorphic features, Jackson Demonstration State Forest, Mendocino County, California. Watershed Mapping Series. California Geological Survey, California Department of Conservation, Sacramento.

Parker, T.K. 2001. Relative landslide potential with geologic and geomorphic features, Noyo River watershed, Mendocino County, California. Watershed Mapping Series. California Geological Survey, California Department of Conservation, Sacramento.

Braun, D.R. and W.R. Short. 2005. Relative landslide potential with geologic and geomorphic features, Big River watershed, Mendocino County, California. Watershed Mapping Series. California Geological Survey, California Department of Conservation, Sacramento.

> Use CGS-compiled landslide maps (Short and Spittler 2002a; Manson et al. 2001; Braun et al. 2005) and relative landslide potential maps [Short and Spittler 2002b; Parker 2001; Braun and Short 2005] to (a) identify areas of potential instability during THP preparation, road layout, and other construction activities, and (b) designate "shallow landslide potential areas" as Special Concern Areas.

The inclusion of this measure in Alternative G renders this effect less than significant.

Mitigation: None required.

Impact 5: *Soil erosion or loss of topsoil will result in a significant individual or cumulative impact.* (Less than Significant)

Because of the changes in management proposed under Alternative G there is a significant decrease in amount and intensity of timber operations that are likely to occur. These changes include: reduce harvest levels; less even aged management; increased buffer widths; expanded special treatment areas (late seral and OFSZ); and review of operations by advisory bodies. These changes in management will reduce the likelihood of significant soil disturbance at the project level and cumulatively across the region. Effects for Alternative G are expected to be less than under Alternative C1 and to be less than significant.

Mitigation: None required.

Impact 6. *Location on unstable geologic unit or soil*. (Less than Significant)

In addition to the measures included in Alternative C1, The following measure has been incorporated into Alternative G, reducing the potential for locating projects on unstable areas to less than significant:

> Use CGS-compiled landslide maps (Short and Spittler 2002a; Manson et al. 2001; Braun et al. 2005) and relative landslide potential maps [Short and Spittler 2002b; Parker 2001; Braun and Short 2005] to (a) identify areas of potential instability during THP preparation, road layout, and other construction activities, and (b) designate "shallow landslide potential areas" as Special Concern Areas.

Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 7. *Location on expansive soil*. (No Impact)

No such problematic soils have been identified at JDSF. Alternative G would have no impact.

Mitigation: None required.

Impact 8. *Soils incapable of supporting on-site septic systems*. (No Impact)

Development is not proposed so there is no potential for impact under Alternative G or the other seven alternatives.

Mitigation: None required.

TABLE III.11 . Comparison of Geology and Soils Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impacts 1-3. Exposure of people or structures to adverse effects involving surface fault rupture, strong seismic shaking, or other seismic-related ground failure.						
Alt. A						No active faults are mapped or otherwise known to occur within JDSF lands. Furthermore, with the JDSF managed for natural resources, minimal human exposure to fault related hazards would occur. This impact is considered less than significant under all seven Forest management alternatives.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 4. Exposure of people or structures to landslides.						
Alt. A						No timber-harvest-related landslides would occur under this scenario; however, landslides could result from failure of existing roads, particularly older legacy roads, without proper mitigation similar to the management strategies presented in the DFMP, including the Road Management Plan, and Mitigation 1, above.
Alt. B						This alternative includes substantial amounts of timber harvest and it does not address legacy road problems. Its protective measures related to landslides are largely those of the Forest Practice Rules. To avoid exposure of people or structures to landslides, apply mitigations similar to the management strategies presented in the DFMP, including the Road Management Plan, Hillslope Management guidelines, and Mitigation 1, above.
Alt. C1 May 2002 DFMP						Landsliding potential is less than significant with mitigation under management scenarios C1 through F, given measures proposed in the DFMP and Mitigation 1. These measures include avoidance or special treatment of unstable and potentially unstable areas. Identification of unstable and potentially unstable areas provided by licensed geologist per guidelines in Forest Practice Rules and Hillslope Management guidelines of the DFMP (Alts. C1, C2, D, E, and F). Apply Mitigation 1, requiring use of CGS landslide and relative landslide potential maps.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						This alternative includes measures for use of the CGS landslide and relative landslide potential maps in Alternative G. The potential for impact is less than significant.

Table III.11. Comparison of Geology and Soils Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 5: Soil erosion or loss of topsoil will result in a significant individual or cumulative impact.						
Alt. A				■		Absence of a proactive road management or systematic evaluation of problematic road sites will result in significant soil erosion without proper mitigation similar to the management strategies presented in the DFMP. Harvesting activities under alternative B pose a risk of erosion impacts unless mitigated using measures included in the DFMP for Hillslope Management guidelines, CEG evaluations, etc.
Alt. B				■		
Alt. C1 May 2002 DFMP			■			The Road Management Plan provides for an inventory and control of potentially significant road-related erosion sites, which will provide a beneficial long-term result. Amounts of harvest-related surface erosion are relative to the amount of area harvested, especially areas subject to even-aged management. Under alternatives C1 through F, there is a short-term unavoidable impact associated with the implementation of the road management plan. Under alternative F, there is an accelerated implementation of the Road Management Plan that will result in more rapid reduction in road-related sediment sources.
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			Changes in management under this alternative, including: reduced harvest levels; less even aged management; increased buffer widths; expanded special treatment areas (late seral and OFSZ); and review of operation by advisory bodies reduce potential impacts as compared with Alternative C1.
Impact 6. Location on unstable geologic unit or soil.						
Alt. A				■		No timber-harvest-related landslides would occur under this scenario; however, landslides could result from failure of existing roads, particularly older legacy roads, without proper mitigation.
Alt. B				■		Geologic review of timber harvest areas and roads as per Forest Practice Rules provides minimal protection; Hillslope Management guidelines, additional measures similar to the management strategies presented in the DFMP, and application of Mitigation 2 would mitigate potential impacts to a less than significant level.
Alt. C1 May 2002 DFMP				■		Geologic review of timber harvest areas and roads as per Forest Practice Rules and Hillslope Management guidelines of DFMP, and through Mitigation 2 to use CGS maps of landslides and relative landslide potential to identify potentially unstable areas, will preclude operations on unstable features and soils. Alts. D, E, and F further preclude operations within inner gorges.
Alt. C2 Nov. 2002 Plan				■		
Alt. D				■		
Alt. E				■		
Alt. F				■		
Alt. G			■			This alternative includes measures for use of the CGS landslide and relative landslide potential maps in Alternative G. The potential for impact is less than significant.

Table III.11. Comparison of Geology and Soils Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 7. Location on expansive soil.						
Alt. A						No such problematic soils have been identified.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 8. Soils incapable of supporting on-site septic systems.						
Alt. A						Future developments requiring on-site septic systems are minimal under any alternative, though alternative E, with its emphasis on recreation, would require more development of recreational facilities with a potential need for septic systems than the other alternatives. In any case, suitable soils for on-site sewage disposal are common in JDSF.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

8. HAZARDS AND HAZARDOUS MATERIALS

Changes in Management under Alternative G Hazards and Hazardous Materials

Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to hazards and hazardous materials.

Individual Impacts

Impact 1. *Impairment or physical interference with an adopted emergency response plan or emergency evacuation plan*. (Beneficial)

Alternative G is the same as Alternative C1 with respect to this impact area. The additional fire inspection, prevention, suppression, and post suppression measures in these alternatives would further implement the goals of existing emergency plans. There would be a beneficial impact under alternative G.

Mitigation: None required.

Impact 2. *Exposure of people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands*. (Beneficial)

Alternative G is the same as Alternative C1 with respect to this impact area. These management alternatives emphasize several wildfire suppression strategies as discussed to reduce fire hazards to nearby homes, thereby resulting in beneficial effects. There would be a beneficial impact under alternative G.

Mitigation: None required.

Impact 3. *A hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.* (Less than Significant)

Same as Alternative C1, but with slightly reduced use of herbicides. Alternative G would eliminate one of the management uses of herbicide permitted under Alternative C1 (treatment of native species for road maintenance purposes) and impose further restrictions on the other two uses, control of hardwoods to adjust conifer/hardwood stocking rations and control of invasive weed species as part of an Integrated Weed Management program. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 4. ***Hazardous materials or safety hazard risks within one-quarter mile of an existing or proposed school, within two miles of a public airport (air within an airport land use planning area) or private airstrip*****. (No Impact)**

Alternative G is the same as Alternative C1 with respect to this impact area. No portion of the JDSF is within one-quarter mile of a school or within two miles of a public airport or private airstrip. While there are several schools, both public and private, located within the vicinity of JDSF, the two closest are approximately two miles north of the western property boundary in Fort Bragg, and one mile west of the southwestern boundary in Mendocino. The County Airport is located approximately 2.5 miles south of the Forest's southwestern border. There would be no impact under alternative G.

Mitigation: None required.

Impact 5. ***Activities on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment*****. (No Impact)**

Alternative G is the same as Alternative C1 with respect to this impact area. On February 26, 2001 a tanker truck overturned on Highway 20 at mile post 21.61 spilling approximately 7,000 gallons of fuel oil. The spill soaked into the ground and entered an unnamed tributary to James Creek. The initial cleanup began on February 28, 2001 and NCRWQCB requires further abatement by the responsible party. All JDSF activities within this area must be completely avoided until the site is remediated pursuant to NCRWQCB standards. There would be no impact under alternative G.

Mitigation: None required.

Table III.12. Comparison of Hazards and Hazardous Materials Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1. Impairment or physical interference with an adopted emergency response plan or emergency evacuation plan.						
Alt. A				■		This alternative would have no active planning to respond to emergencies and no road management plan to inventory and maintain roads for emergency evacuations. Mitigation would consist of implementation of such plans and maintenance provisions for roads determined important for fire access/egress.
Alt. B	■					These management alternatives would provide the basis for implementing the Spill Prevention Control and Countermeasure (SPCC) Plan and the Road Management Plan resulting in beneficial effects.
Alt. C1 May 2002 DFMP	■					
Alt. C2 Nov. 2002 Plan	■					
Alt. D	■					
Alt. E				■		This alternative would maintain an SPCC plan but would also entail an aggressive road-decommissioning program that could significantly hinder emergency fire access/egress. Mitigation would consist of an inventory and maintenance plan for roads determined to be important for this purpose. Such a strategy may conflict with this alternative's biological resource emphasis.
Alt. F	■					Similar to Alternatives B, C1, C2, and D, with faster implementation of the Road Management Plan.
Alt. G	■					Similar to C1

Table III.12. Comparison of Hazards and Hazardous Materials Related to Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 2. Exposure of people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.						
Alt. A				■		This alternative would have no active fire presuppression activities and no road management plan to inventory and maintain roads for fire fighting access. Mitigation would consist of implementation of a fire prevention plan and a maintenance provision for roads determined important for fire access.
Alt. B	■					These management alternatives emphasize several wildfire suppression strategies as discussed to reduce fire hazards to nearby homes, thereby resulting in beneficial effects.
Alt. C1 May 2002 DFMP	■					
Alt. C2 Nov. 2002 Plan	■					
Alt. D	■					
Alt. E				■		This alternative would encourage less intensive Forest management to the detriment of fire protection measures such as maintaining roads to access fires and constructing fuel breaks. Mitigation would consist of developing fire suppression strategies, which may conflict with this alternative's biological resource emphasis.
Alt. F	■					Similar to Alternatives B, C1, C2, and D.
Alt. G	■					

Table III.12. Comparison of Hazards and Hazardous Materials Related to Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 3. A hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.						
Alt. A						No logging activity or vegetation control would occur under this alternation; therefore, no hazardous materials use would occur.
Alt. B						Alternatives B, C1, and C2 would provide for continued use of herbicides (though this is more limited under Alternatives C1 and C2) and continued use of hazardous materials associated with logging activities. Such uses are strictly regulated and under either alternative; the impact would be less than significant.
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						Alternatives D and E would prohibit the use of herbicides; however logging would still occur to varying degrees resulting in the use of hazardous materials. Again, such uses would be strictly regulated and under either alternative, the impact would be less than significant.
Alt. E						
Alt. F						Similar to C1 and C2, though likely with more uncertainty regarding use of herbicides. Herbicides to be used only if other control methods fail. Failure of initial non-herbicide treatments may result in expanding invasive plant infestations increasing the area needing herbicide treatment.
Alt. G						Similar to C1 but with somewhat reduced and more restricted use of herbicides.

Table III.12. Comparison of Hazards and Hazardous Materials Related to Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 4. Hazardous materials or safety hazard risks within one-quarter mile of an existing or proposed school, within two miles of a public airport (air within an airport land use planning area) or private airstrip.						
Alt. A						JDSF is not located within one-quarter mile of a school or within two miles of a public airport or private airstrip.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 5. Activities on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.						
Alt. A						No activities are proposed or permitted within known hazardous sites, unless remediated pursuant to NCRWQCB standards.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

9. HERITAGE RESOURCES

Changes in Heritage Resources Management under Alternative G

Management of JDSF under Alternative G will differ somewhat from management under Alternative C1 (May 2002 DFMP) as it relates to heritage resources, with the addition of the following Management Goals, described below:

Management Goal 1: Maintain the existing comprehensive, confidential heritage resources database for JDSF lands for use by designated on-site managers, including systematic mapping of prior archaeological survey coverages, and locations of formally recorded and noted heritage resources; concurrent with this, establish a single systematic numbering system for sites assigned various designations (primary numbers, trinomials, IHR numbers, field numbers, etc.) and for bibliographic references; compile copies of all heritage resources reports pertaining to JDSF, and establish a numeric system for retrieving these references; establish a reference library of pertinent regulations and laws, and relevant ethnographic, historical and archaeological publications (*cf* Government Code Section 6254.10).

Management Goal 2: Assign responsibility for managing heritage resources to an on-site staff person who will maintain the above database and interface with professionals as needed, and serve as the point-of-contact for Native Americans who have heritage ties to the Forest and other interested parties such as local historical societies [*cf* Public Resources Code (PRC) Section 5097.9].

Management Goal 3: Formally record all historic period sites and features noted by Gary and Hines (1993) and Medin (1994) (*cf* Foster and Thornton 2001:68; OHP 1989, 1995).[4]

Management Goal 4: As needed during project review and in consultation with the SHPO, complete formal site significance evaluations per California Register of Historical

[4] Gary, Mark and Philip Hines.1993. An Inventory of Historical Resources within Jackson Demonstration State Forest, Mendocino County, California. CDF Archeological Reports No. 14. California Department of Forestry and Fire Protection, Sacramento.

Medin, Anmarie. 1994. A Research Design for determining Legal Significance of Logging Related Historic Properties in Jackson Demonstration State Forest. M.A. Thesis, California State University, Sonoma

Foster, Daniel G., and Mark V. Thornton. 2001. Management Plan for CDF's Historic Buildings and Archaeological Sites [Foster and Thornton] and Accompanying Environmental Impact Report [Foster and Sosa]. CDF Archaeological Reports Number 22. Also available on-line at: http://www.indiana.edu/~e472/cdf/assistcdf/plan.pdf

Office of Historic Preservation (OHP). 1989. Archaeological Resource Management Reports (ARMR): Recommended Contents and Format. Preservation Planning Bulletin Number 4, Sacramento.

Office of Historic Preservation (OHP). 1995. Instructions for Recording Historical Resources. Sacramento.

Resources criteria for all recorded resources, relying on pertinent references, for contextual information about historic sites, buildings and structures and more recent regional studies of prehistoric resources (*cf* PRC Sections 5020 through 5024; CEQA; OHP 1991).[5]

Management Goal 5: Through the designated on-site heritage resources manager (Goal 2, above), consult directly with interested Tribes to identify traditional cultural properties, appropriately manage important traditional native plant collecting areas), establish protocols for Native American access for collecting, and provide opportunities for their participation in interpreting Native American history and prehistory at JDSF for public benefit (*cf* PRC Section 5097.9; CAL FIRE Native American collecting policy).

Management Goal 6: Identify and catalog existing archaeological collections and archival materials, to the extent practical consolidate collections in a secure place accessible for research and interpretation, establish a collecting policy for JDSF staff and contractors, and implement a curation plan that includes accessioning future collected artifacts and pertinent records (*cf* Foster and Thornton 2001:69; *Guidelines for the Curation of Archaeological Collections*, per PRC Section 5020.5(b); California and Federal NAGPRA laws).

Management Goal 7: Monitor and periodically inspect heritage resources on JDSF to ensure that existing polices are providing effective protection (*cf* Executive Order W-26-92; PRC Sections 5020-5024; CEQA).

Management Goal 8: Conduct heritage resources training for all permanent CDF field forestry staff working at JDSF, and obtain and maintain current certification in identification of archaeological sites for key staff to assist with heritage resources surveys, site recordation, monitoring of mitigation measures and site conditions, handling inadvertent discoveries, and educating contractors and the public about heritage resource protection laws and JDSF's heritage resources.

Management Goal 9: As funding and opportunities allow (e.g., competitive grants, interagency agreements with California State University anthropology programs), CDF will prioritize completion of a general (non-THP-specific) heritage resource inventory (including formal recordation and significance evaluation) for road systems and for those areas of JDSF suitable for tractor logging and where the highest ranked, appropriately sized merchantable conifer timber (e.g., redwood and Douglas-fir) occurs**.**

Management Goal 10: In concert with the road inventory described in the *Road Management Plan* for JDSF (May 2002 DFMP Appendix VI), make it a priority to complete within three years of the five year effort the heritage resources inventory for the existing road system (including rock borrow pits and related appurtenances) by employing standard procedures described in Archaeological *Review Procedures for*

[5] Office of Historic Preservation (OHP). (1991). Guidelines for Archaeological Research. Sacramento.

CDF Projects (Foster 2003).[6] Consult with interested Tribes to determine if significant traditional cultural properties or other heritage resources such as plant collecting areas are present and may be affected. Planning for road improvements or abandonment needs to consider and implement measures to avoid or minimize potential impacts to significant heritage resources. Document heritage resources study findings using the CDF Archaeological Survey Report form or other report format consistent with OHP (1989) guidelines.

Mitigations from Alternative C1 – Mitigations developed in the 2005 DEIR that addressed heritage resources have been fully incorporated into Alternative G as management measures. These are:

Measure 1

Implement appropriate measures (project redesign and site avoidance, or mitigation such as data recovery or documentation of historic buildings in accordance with the Secretary of Interior's Standards) to avoid, minimize or mitigate adverse impacts from timber harvesting on significant heritage resources that may be impacted by THP activities. THP reviews will regularly consider potential impacts to significant heritage resources located along regularly used or main logging access roads, assess the potential for long-term site attrition, consider the appropriateness of CARIDAP: Sparse Lithic Scatters (Jackson et al. 1988)[7] and, for other types of sites, consider data recovery excavations, site capping, and/or road realignment and proper abandonment where feasible and appropriate. To do this, the appurtenant roads need to be mapped and included in the archaeological survey for the THP. Road survey coverage shall be plotted on the JDSF archaeological survey database maps.

Measure 2

THP-specific studies performed in accordance with Forest Practice Rules shall include (a) oversight and review of Confidential Archaeological Addendums by qualified professional archaeologist for studies conducted by certified RPFs, (b) a current archaeological records check as defined in 14 CCR Section 895.1 that would include review of identified but unrecorded historic resources listed in Gary and Hines (1993), and (c) formal recordation to current standards of all identified heritage resources, among other standard procedures.

Measure 3

Conduct heritage resources training for all permanent forestry field staff at JDSF, and obtain and maintain current certification in identification of archaeological sites for key staff to assist with heritage resources surveys, site recordation, monitoring of mitigation

[6] Foster, Daniel G. 2003. Archaeological Review Procedures for CDF Projects. Report on file at the CDF Archaeology Office, Sacramento. Also available on-line at: http://www.indiana.edu/~e472/cdf/assistcdf/archrevprocedures.doc

[7] Jackson, Robert, Michael Boynton, William Olsen, and Richard Weaver. 1988. California Archaeological Resource Identification and Data Acquisition Program CARIDAP): Sparse Lithic Scatters: A Program for the Identification and Management of an Archaeological Resource Class. California State Office of Historic Preservation, Sacramento.

measures and site conditions, handling inadvertent discoveries, and educating contractors and the public about heritage resource protection laws and JDSF's heritage resources.

Measure 4

The JDSF Forest Manager or his/her designee will initiate consultation with local Native American tribes regarding Native American gathering areas or other locations of cultural or religious importance. Confirmed locations shall be plotted on the JDSF heritage resource database. This database will be reviewed prior to each THP, and specific management of these locations will be developed.

Measure 5

In concert with the Pre-Suppression Plan to be developed for JDSF, employ appropriate procedures prescribed in *Archaeological Review Procedures for CDF Projects (*Foster 2003) to avoid potential impacts to significant heritage resources where pre-fire defense improvements (e.g., fire breaks, fuel reduction treatments, helispot locations, water tanks, adequate road and trail access) and incident camps would be established. Document heritage resources study findings using the CDF Archaeological Survey Report form or other report format consistent with OHP (1989) guidelines.

Measure 6

To the extent practical during emergency fire-fighting activities, rely on persons trained to identify archaeological sites (CDF Archaeologists, professional archaeologist-contractors and/or CDF staff with current archaeological training) to avoid or minimize heritage resource impacts from fire suppression and support activities (e.g., grading or hand-digging of fuel breaks, establishment of incident camps).

Measure 7

After a wildfire has been suppressed, request a CDF Archaeologist to oversee and document site damage assessments and as needed, develop and supervise site stabilization, data recovery or rehabilitation efforts, with assistance, to the extent possible, from CDF staff possessing current archaeological training.

Measure 8

To lessen the potential for significant impacts to heritage resources, CDF shall adhere to the procedures for the identification and protection of heritage resource established for prescribed burn projects located on private or state lands conducted under the Department's VMP program. These procedures are specified in *Archaeological Review Procedures for CDF Projects* (Foster 2003), which requires a Preliminary Study to determine if impacts to heritage resources are possible. If so determined, a heritage resource inventory will be required, including a records check, notification to Native Americans, prefield research, an on-the-ground field survey, development of protection measures, recording of sites, and the completion of an archaeological survey report meeting professional standards.

Measure 9

Potential adverse impacts to important Native American plant collecting areas from prescribed burns will be avoided by consulting with interested Tribes about potential effects of fire on plant collecting areas and modification of prescribed burn plans as necessary to avoid significant adverse effects.

Measure 10

Prior to the conduct of potentially damaging project activity and in consultation with CDF professional archaeologists, apply appropriate research and survey methods to identify heritage resources along roads that have potential to be impacted by regular road maintenance and use of existing rock borrow pits and enact protection measures (e.g., avoid grading, cover with imported soils or asphalt, monitor operations) to minimize or avoid impacts to significant sites. Document heritage resources study findings using the CDF Archaeological Report Form or other report format consistent with OHP (1989) guidelines. In concert with the present practice of avoiding impacts to known heritage resources from regular road maintenance, apply the standard steps prescribed in *Archaeological Review Procedures for CDF Projects* (Foster 2003) to avoid impacts to known heritage resources from maintenance of related road appurtenances (e.g., culverts, bridges) and existing borrows pits. Prior to any road grading work, the current database of heritage resources shall be checked to determine if any known sites exist along the road segments to be treated, and an archaeological survey of the road segments shall be conducted by either a professional archaeologist or permanent forestry field staff with current archaeological training. The results of road segment surveys will be added to the heritage resources database and referred to for determining which road segments can undergo periodic road maintenance activities without additional archaeological considerations and which segments need ongoing monitoring. Specific mitigation measures to record and/or protect the site(s) will be developed.

Measure 11

For new road construction or substantial improvements to existing roads and appurtenances (including development of new rock borrow pits), apply standard procedures described in *Archaeological Review Procedures for CDF Projects* (Foster 2003) to avoid potential impacts to significant heritage resources. Consider relocation of new roads as needed to avoid potential impacts to significant heritage resources. Where known site boundaries are not systematically defined or in question, establish reasonable buffer zones for heritage resources where ground disturbing maintenance activities will be avoided, and monitor for compliance. Document heritage resources study findings using the CDF Archaeological Survey Report form or other report format consistent with OHP (1989) guidelines.

Measure 12

When planning for decommissioning of roads and/or related appurtenances, employ standard procedures described in *Archaeological Review Procedures for CDF Projects* (Foster 2003) to avoid potential impacts to significant heritage resources. Consult with interested Tribes whose aboriginal territories included all or part of JDSF to determine if

significant traditional cultural properties or other heritage resources such as plant collecting areas are present and may be affected. Where impact avoidance is not feasible, consult with a CDF archaeologist to develop and implement alternative mitigation measures. Document heritage resources study findings using the CDF Archaeological Survey form or other report format consistent with OHP (1989) guidelines.

Measure 13

Before substantial ground disturbing maintenance or planned improvements are carried out (May 2002 DFMP Section 3, Recreation, Aesthetics, and Public Use), an archaeological survey shall be performed by a CDF staff archaeologist or a person with current CDF archaeological training. The survey shall follow the procedures outlined in *Archaeological Review Procedures for CDF Projects* (Foster 2003). Document heritage resources study findings in a format adapted from CDF's Archaeological Survey Form or other report format consistent with OHP (1989) guidelines.

Measure 14

Identify known heritage resources in existing campgrounds, other high-use visitor areas (e.g., Camp 20), and in area of other administrative facilities that are being impacted by regular maintenance activities, and enact protection measures to minimize or avoid impacts to significant sites. Document heritage resources study findings using the CDF Archaeological Survey Form or other report format consistent with OHP (1989) guidelines. Planning for regular maintenance of, development of new, improvements to and abandonment of facilities needs to consider and implement measures to avoid or minimize potential impacts to significant heritage resources. Document heritage resources study findings in a format adapted from CDF's Archaeological Survey Report form or other report format consistent with OHP (1989) guidelines.

Measure 15

Develop new trails, recreational and visitor facilities to minimize potential for vandalism. Educate contractors and visitors about the proper procedures for protecting any artifacts that they may find on JDSF.

Measure 16

Revise the more widely distributed JDSF visitor brochures to include an advisory statement that the unauthorized collecting of artifacts and the looting or vandalism of sites is prohibited by State law, and provide direction on what the visitor should do in the event that prehistoric or historic artifacts are encountered on the Forest.

Measure 17

Consult with interested Tribes to identify important traditional plant collecting areas. Minimize or avoid pesticide use in traditional collection areas where such action will reduce adverse impact on plant resources traditionally utilized by Native Americans. Develop a Native American gathering permit policy where such gathering can be permitted by the Forest Manager, and take steps to ensure that gathering does not take place in any areas that may have been treated with herbicides.

Measure 18

When planning for or reviewing proposed demonstration and research projects that have the potential to disturb significant heritage resources, employ standard procedures described in *Archaeological Review Procedures for CDF Projects* (Foster 2003), and in the *Forest Practice Rules for the Protection of Archaeological and Historical, and Cultural Sites (CDF 2003)*, and include a check of the current JDSF heritage resource database to include review of historic period sites identified by Gary and Hines (1993) to avoid potential impacts to significant heritage resources. Document heritage resources study findings in the CDF archaeological Report form, or other report format consistent with OHP (1989) guidelines.

Individual Impacts

Timber Harvesting

Impact 1. *Potential for individual or cumulative impacts to significant heritage resources from timber harvesting*. (Less than Significant)

Alternative G adds measures 1-4, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Fire Protection And Prescribed Burn Programs

Impact 2. *Potential for impacts to significant heritage resources from establishment of pre-suppression facilities, and during emergency fire protection and post-fire mop-up and stabilization activities*. (Less than Significant)

Alternative G adds measures 5-7, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Impact 3. *Potential for impacts to significant prehistoric sites and historic structures, buildings and sites from prescribed burn program activities*. (Less than Significant)

Alternative G adds measure 8, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Impact 4. *Potential for impacts to important Native American plant collecting areas from prescribed burn program activities*. (Less than Significant)

Alternative G adds measure 9, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Transportation Systems: Road Maintenance, Construction and Abandonment

Impact 5. *Potential for individual or cumulative impacts to significant heritage resources from regular maintenance of roads and related appurtenances (e.g., culverts, bridges), construction of new roads and related appurtenances, improvements to existing roads and related appurtenances, use of existing or establishment of new borrow pits, and road abandonment.* (Less than Significant)

Alternative G adds measures 10-12, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Recreation and Public Uses, and Maintenance of Existing Facilities

Impact 6. *Potential for individual and cumulative impacts to significant heritage resources from ground-disturbing activities related to maintenance of and improvements to or abandonment of existing campgrounds, other existing recreational and visitor developments, and administrative facilities*. (Less than Significant)

Impact 7. *Potential for impacts to significant heritage resources from construction of new recreational, visitor and administrative facilities*. (Less than Significant)

Alternative G adds measures 13 and 14, listed above, to the protections included in Alternative C1. With the inclusion of these measures, these two impacts will be less than significant for Alternative G.

Mitigation: None required.

Impact 8. ***Potential for individual or cumulative impacts from illicit artifact collecting or vandalism of significant heritage resources by the public, contractors and CDF staff and their families who use or frequent recreational, visitor and/or administrative facilities*****. (Less than Significant)**

Alternative G adds measures 15 and 16, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Herbicide Use and Native American Collecting

Impact 9. ***Potential for impacts on traditional Native American plant collecting resources areas and for increased health risks from application of herbicides at JDSF.*** **(Less than Significant)**

Alternative G adds measure 17, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Interpretation, Demonstration and Research Programs

Impact 10. ***Potential individual or cumulative impacts to significant heritage resources from JDSF demonstration and research programs, including direct effects from ground disturbing actions and indirect, short and long-term effects from illicit artifact collecting and vandalism from increased user population, including visiting public, school and other groups, professionals, contractors and researchers*****. (Less than Significant)**

Alternative G adds measure 18, listed above, to the protections included in Alternative C1. With the inclusion of these measures, the impacts of Alternative G will be less than significant.

Mitigation: None required.

Table III.13. Alternative Comparison for Heritage Resources by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
Timber Harvesting **Impact 1. Potential for individual or cumulative impacts to significant heritage resources from timber harvesting.**						
Alt. A		■				No timber harvest would occur under this alternative.
Alt. B				■		There is no substantial difference among the active management alternatives. Each alternative will involve timber harvests, though at varied intensities, resulting in potentially significant impacts and the need for identical mitigation measures as specified (see Management Goals 1-10; Mitigation Measures 1-4).
Alt. C1 May 2000 DFMP				■		
Alt. C2 Nov. 2002 Plan				■		
Alt. D				■		
Alt. E				■		
Alt. F				■		
Alt. G			■			Measures have been included in Alternative G that reduce the impact to less than significant (see text above).
Fire Protection and Prescribed Burn Programs. **Impact 2. Potential for impacts to significant heritage resources from establishment of pre-suppression facilities, and during emergency fire protection and post-fire mop-up and stabilization activities.** **Impact 3. Potential for impacts to significant prehistoric sites and historic structures, buildings and sites from prescribed burn program activities** **Impact 4. Potential for impacts to important Native American plant collecting areas from prescribed burn program activities (in some cases, potentially beneficial).**						
Alt. A				■		This alternative would eliminate prescribed burns; however, natural fires would still occur and likely at greater intensities than on a managed Forest with prescribed burns and active fire suppression planning. Therefore, similar impacts would occur due to natural fires and measures to extinguish them. Mitigation measures would be needed as proposed for the alternatives below (see below).
Alt. B				■		There is no substantial difference among the active management alternatives. Each alternative will involve active prefire and fire suppression measures to some degree and the likelihood for naturally occurring fires. These activities will result in potentially significant impacts and the need for identical mitigation measures as specified (see Management Goals 1-10; Impact 2, Mitigation Measures 5-7; Impact 3, Mitigation Measure 8; Impact 4: Mitigation Measure 9).
Alt. C1 May 2000 DFMP				■		
Alt. C2 Nov. 2002 Plan				■		
Alt. D				■		
Alt. E				■		
Alt. F				■		
Alt. G			■			Measures have been included in Alternative G that reduce the impact to less than significant (see text above).

Table III.13. Alternative Comparison for Heritage Resources by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
Transportation Systems: Road Maintenance, Construction and Abandonment. Impact 5. Potential for individual or cumulative impacts to significant heritage resources from regular maintenance of roads and related appurtenances (e.g., culverts, bridges), construction of new roads and related appurtenances, improvements to existing roads and related appurtenances, use of existing or establishment of new borrow pits, and road abandonment.						
Alt. A				■		No new roads would be constructed and no existing roads would be decommissioned; however, maintenance to existing roads would continue resulting in potentially significant impacts and the need for Mitigation Measures 10-12 as specified.
Alt. B				■		No road management plan is proposed and no road decommissioning would occur; however, new roads would continue to be constructed resulting in potentially significant impacts and the need for Mitigation Measures 10-12 as specified.
Alt. C1 May 2000 DFMP				■		There is no substantial difference among alternatives C1, C2, and D. Each alternative will involve construction of new roads (although fewer new roads under alternative D), and road decommissioning pursuant to the Road Management Plan. These activities will result in potentially significant impacts and the need for identical mitigation measures as specified (see Management Goals 1-10; Mitigation Measures 10-12).
Alt. C2 Nov. 2002 Plan				■		
Alt. D				■		
Alt. E				■		No new roads would be constructed; however, maintenance to existing roads and an aggressive road decommissioning program would occur resulting in potentially significant impacts and the need for Mitigation Measures 10-12 as specified.
Alt. F				■		Similar to C1, C2, and D, though more rapid implementation of Road Management Plan
Alt. G			■			Measures have been included in Alternative G that reduce the impact to less than significant (see text above).

Table III.13. Alternative Comparison for Heritage Resources by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Significant - Mitigation Feasible (5) Significant -Mitigation Not Feasible**
Recreation And Public Uses, and Maintenance Of Existing Facilities. Impact 6. Potential for individual and cumulative impacts to significant heritage resources from ground-disturbing activities related to maintenance of and improvements to or abandonment of existing campgrounds, other existing recreational and visitor developments, and administrative facilities. Impact 7. Potential for impacts to significant heritage resources from construction of new recreational, visitor and administrative facilities. Impact 8. Potential for individual or cumulative impacts from illicit artifact collecting or vandalism of significant heritage resources by the public, contractors and CDF staff and their families who use or frequent recreational, visitor and/or administrative facilities.						
Alt. A						There is no substantial difference among the alternatives. All will involve recreational use and either maintenance of existing facilities or construction of limited new facilities to varying degrees resulting in potentially significant impacts and the need for similar mitigation measures as specified (see Management Goals 1-10; Impacts 6-7, Mitigation Measures 13-14; Impact 8, Mitigation Measures 15-16).
Alt. B						
Alt. C1 May 2000 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						Measures have been included in Alternative G that reduce the impact to less than significant (see text above).

Table III.13. Alternative Comparison for Heritage Resources by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
Herbicide Use and Native American Collecting. **Impact 9. Potential for impacts on traditional Native American plant collecting resources areas and for increased health risks from application of herbicides at JDSF.**						
Alt. A						Herbicides would be used for road maintenance. Native plants would be reduced in number due to lack of an active program to control invasive non-native species. This impact would be less than significant since no native plant is likely to be eliminated from the site due to lack of control program. Where used, apply same mitigations as for Alt. C1
Alt. B						Highest potential herbicide use for timber management and project-by-project invasive weed control. Mitigation (see Alt C1, following) would reduce this impact to less than significant.
Alt. C1 May 2000 DFMP						Moderate potential herbicide use as part of the IWM strategy for invasive plant control and limited use for reforestation. Mitigation (see Management Goals 2 and 5; Mitigation Measure 17) would reduce this impact to less than significant.
Alt. C2 Nov. 2002 Plan						Moderate potential herbicide use as part of the IWM strategy for invasive plant control and limited use for reforestation. Mitigation d and o (page 88 & 89 of JDSFMP-November 6, 2002) and similar mitigations for Alt C1 in this document and would reduce this impact to less than significant.
Alt. D						No herbicide use during three-year moratorium. Increased risk of invasive plant numbers increasing if alternative control methods are less than effective during moratorium. Where used, apply same mitigations as for Alt. C1.This alternative also calls for proactive coordination with local Tribes.
Alt. E						No herbicide use would occur. Vegetation would be managed with non-chemical means.
Alt F.						Herbicides will be used only if other approaches fail. Increased risk of invasive plant numbers increasing if alternative control methods are less than effective. Where used, apply same mitigations as for Alt. C1.
Alt. G						Measures have been included in Alternative G that reduce the impact to less than significant (see text above).

Table III.13. Alternative Comparison for Heritage Resources by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant -Mitigation Not Feasible**
Interpretation, Demonstration And Research Programs. **Impact 10. Potential individual or cumulative impacts to significant heritage resources from JDSF demonstration and research programs, including direct effects from ground disturbing actions and indirect, short and long-term effects from illicit artifact collecting and vandalism from increased user population, including visiting public, school and other groups, professionals, contractors and researchers.**						
Alt. A		■				No research or demonstration activities would occur.
Alt. B				■		There is no substantial difference among the active management alternatives. Each will involve research and demonstration activities to varying degrees resulting in potentially significant impacts and the need for mitigation measures as specified (see Management Goals 1-10; Mitigation Measure 18).
Alt. C1 May 2000 DFMP				■		
Alt. C2 Nov. 2002 Plan				■		
Alt. D				■		
Alt. E				■		
Alt. F				■		
Alt. G			■			Measures have been included in Alternative G that reduce the impact to less than significant (see text above).

10. HYDROLOGY AND WATER QUALITY

Changes in Management under Alternative G Affecting Hydrology and Water Quality

Management of JDSF under Alternative G will differ somewhat from management under Alternative C1 (May 2002 DFMP) as it relates to hydrology and water quality. Those changes, in goals and objectives and management direction, are described below.

Changes to Alternative C1 Goals and Objectives

Alternative G made changes to the Goals and Objectives under Alternative C1. These include:

Forest Restoration is moved to Goal #2 and is modified to read:

> Work towards ~~achieving a balanced mix of forest structures and attributes in order to enhance~~ <u>active restoration by managing the Forest to promote and enhance</u> forest health and productivity.

The following objectives were added to Goal #2 and will have a beneficial effect on water quality:

> <u>Increase the amount of older forest structure and late seral forest available for terrestrial wildlife, including areas adjacent to aquatic habitats.</u>
>
> <u>Focus on restoring more productive river and stream systems from the low gradient floodplains to intermittent streams in the upper reaches to improve the habitat conditions and populations of salmonids, other fish species, amphibians, and other plants and animals dependent on riparian ecosystems.</u>

Changes in Alternative C1 Specific Management Actions

Alternative G has adopted various changes in management and incorporated numerous mitigation measures that further reduce impacts to hydrology and water quality. These include:

Older Forest Structure Zone - Alternative G adds a contiguous Older Forest Structure Zone area of 6,803 acres, extending across the Forest from west to east and north to south (see Map Figure 1). Management of the Older Forest Structure Zone for the development and maintenance of older forest structure will reduce ground disturbance and opportunities for impacts to hydrology and water quality.

Late Seral Habitat - The area devoted to development of late-seral forest habitat has been increased by 1,549 acres under Alternative G. This represents a significant

increase in the portion of the forest were less ground disturbance due to forest management activities will occur.

Even-aged Management - Alternative G reduces the potential extent of even-aged management from 29 percent (2002 DFMP Table 6) to 26 percent (Table II.2), as well as the rate at which even-aged management may be conducted. This is likely to represent a small to modest increase in environmental protection, due to the fact that even-aged management may produce a greater impact upon both watershed resources and forest vegetation than uneven-aged management.

Initial Implementation Period Harvest Limitations - Special harvest limitations have been established, and are expected to remain in place for up to a three-year initial implementation period, while advisory entities consider JDSF management and make recommendations to the Department and the Board for possible modifications of the management plan. The interim harvest standards generally maintain or reduce the level of proposed harvest, when compared to the harvest prescriptions that were designated under Alternative C1. The intent of the interim standards is to avoid changes within individual harvest areas that will preclude future management options. The interim standards limit harvest intensity by setting targets for basal area retention and average stem size. Post-harvest conifer stocking (basal area) levels will be approximately 70 percent of pre-harvest levels, and average tree size as determined by quadratic mean stem diameter will be approximately equal to or greater than pre-harvest levels. This equates to a relatively light stand thinning or selection harvest. These interim measures will protect and enhance aesthetics during the up to three-year review of the Plan.

Rate of Harvest – The management of JDSF according to the provisions set out in Alternative G is expected to reduce average annual harvest from 31 million board feet per year under Alternative C1 to approximately 20 million board feet per year during the term of the management plan. A reduction in annual harvest may contribute to a reduction in the level of soil disturbance lessened impacts to hydrology and water quality.

Buffers - The Late Seral Development Areas, Older Forest Structure Zones and old-growth grove reserves will receive special silvicultural management zone buffers when THPs are adjacent. No even-aged silvicultural systems may be used within 300 feet, and only single tree/cluster selection or thinning may be used within the first 100 feet adjacent to these areas. The buffers proposed under Alternative G will reduce the frequency and intensity of operations within these management zones as compared with management proposed under Alternative C1.

Advisory Bodies – Provisions have been established under Alternative G for the utilization of advisory entities to consider the management of the Forest and to advise the Department and the Board concerning the long-term management of JDSF. These entities will likely consider the effects of forest management activities on hydrology and water quality and recommend future management that enhances and protects those resources.

Mitigations from Alternative C1 – A mitigation in the 2005 DEIR that addressed landslide potential and promotes water quality has been fully incorporated into Alternative G as a management measure:

> Use CGS-compiled landslide maps (Short and Spittler 2002a; Manson et al. 2001; Braun et al. 2005) and relative landslide potential maps [Short and Spittler 2002b; Parker 2001; Braun and Short 2005] to (a) identify areas of potential instability during THP preparation, road layout, and other construction activities, and (b) designate "shallow landslide potential areas" as Special Concern Areas.

Individual Impacts

Impact 1. *Violate any water quality standards or waste discharge requirements*. (Less than Significant)

The management of JDSF proposed under Alternative C1 was found to not violate water quality standards or waste discharge requirements. Alternative G, with less timber management (reduction in harvest from an annual average of 31 million board feet to about 20 million board feet), greater area in older forests, as well as the additional measures to avoid the potential for landslides, will be less likely to violate these standards or requirements. Alternative G will have a less-than-significant impact.

Mitigation: None required.

Impact 2. *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level*. (No Impact)

Neither Alternative G nor any of the other seven alternatives will have any impact on ground water supply.

Mitigation: None required.

Impact 3. *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site*. (Less than Significant)

Alternative G, with a lower level of annual timber harvest (reduction in harvest from an annual average of 31 million board feet to about 20 million board feet), greater area in

older forests, as well as the additional measures to avoid the potential for landslides, will be less likely to result in either on or off site erosion as compared with management of JDSF proposed under Alternative C1. Alternative G will have a less-than-significant impact.

Mitigation: None required.

Impact 4. *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site*. (Less than Significant)

Alternatives A through F are not expected to produce significant effects due to flooding caused by changes in drainage or increases in surface runoff. Alternative G, with a lower level of annual timber harvest (reduction in harvest from an annual average of 31 million board feet to about 20 million board feet), greater area in older forests, as well as the additional measures to avoid the potential for landslides, will be less likely to result in these effects than Alternative C1. Alternative G will have a less-than-significant impact.

Mitigation: None required.

Impact 5. *Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff*. (No Impact)

Alternative G is similar to Alternative C1 with respect to this impact. Per the analysis in the 2005 DEIR, none of the alternatives would result in a significant impact to stormwater drainage systems or provide substantial additional sources of polluted runoff. Alternative G would not have an impact.

Mitigation: None required.

Impact 6. *Otherwise substantially degrade water quality*. (No Impact)

Neither Alternative G nor any of the other seven alternatives will substantially degrade water quality.

Mitigation: None required.

Table III.14. Comparison of Hydrology and Water Quality Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1. Violate any water quality standards or waste discharge requirements						
Alt. A			■			Alternative A (No Action) would not result in timber harvest but would result in sedimentation impacts through deterioration and continued use of existing roads. The primary water quality standards associated with JDSF are turbidity, and to a very limited extent, campground facilities. Turbidity is minimized in the harvest management alternatives (B-G) by watercourse protection zones. The Road Management Plan (Alternatives C1-G) will also help to identify and reduce surface erosion and mass wasting from roads, particularly for roads that exist within riparian zones. The new Additional Management Measure for an Accelerated Road Management Plan for alternatives C1 and C2 will help the speed up the delivery of the sediment reduction benefits of the Road Management Plan proposed in the DFMP. Alternative A would not have recent harvest-related turbidity, but both alternatives A and B could have more sediment yield and turbidity from roads due to a less aggressive road management program. Recent orders from the North Coast Regional Water Quality Control Board (NCRWQCB) will help to ensure that violations of waste discharge requirements do not occur from implementation of the alternatives related to timber harvesting, including General Waste Discharge Requirements (WDRs) for Discharges Related to Timber Activities on Non-Federal Lands in the North Coast Region The GWDR program has a two-pronged approach to reduce significant sediment input to watercourses: (1) prevention/minimization of new sediment sources, and (2) development and implementation of a program to mitigate existing sediment source areas through an Erosion Control Plan (ECP). Campground maintenance is unchanged in all alternatives, and is not anticipated to violate any waste discharge requirements. None of the alternatives are expected to violate water quality standards or waste discharge requirements.
Alt. B			■			
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G						
Impact 2. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.						
Alt. A		■				None of the alternatives will result in a depletion of groundwater recharge. On the contrary, timber harvesting has been shown in a number of studies to increase seasonal low flows due to the net loss of evapotranspiration from trees.
Alt. B		■				
Alt. C1 May 2002 DFMP		■				
Alt. C2 Nov. 2002 Plan		■				
Alt. D		■				
Alt. E		■				
Alt. F		■				
Alt. G						

Table III.14. Comparison of Hydrology and Water Quality Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 3. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site.						
Alt. A			■			None of the alternatives propose any drainage pattern alterations; however, heavy equipment operations and road networks can indirectly cause stream course alterations which could possibly result in erosion or siltation on- or off site. Each of the management alternatives (B-G) has watercourse protection measures and road improvements: the relative scope of the protections varies with each alternative (e.g., alternative B maintains the current standard protections, while alternative E has the most sweeping protections). Alternatives A and B could have more road related erosion than the other alternatives due to a less aggressive road management program. The conservative management proposed under Alternative G reduces opportunities for impacts to occur. However, none of the alternatives are expected to substantially increase sediment delivery.
Alt. B			■			
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			
Impact 4. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site.						
Alt. A		■				Alternative A has no action associated with it and therefore would have no impact. None of the alternatives propose any drainage pattern alterations; however, timber harvesting and road systems can indirectly cause increases in the amount of surface runoff, which could result in flooding on- or off site. Increases in peak flows from contemporary timber operations have been within the range of expected natural variability. Based on peak flow modeling presented in Appendix 10 of the 2005 DEIR, none of the alternatives is expected to substantially alter the amount of surface runoff in a manner that would result in a significant increase in flooding.
Alt. B			■			
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			

Table III.14. Comparison of Hydrology and Water Quality Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 5. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.						
Alt. A						Contemporary increases in peak flows from timber operations have been apparently benign. Based on peak flow modeling presented in Appendix 10 of the 2005 DEIR, none of the alternatives is expected to substantially alter the amount of surface runoff in a manner that would result in a significant increase in flooding. None of the alternatives is expected to exceed the capacity of stormwater drainage systems or provide substantial additional sources of polluted runoff.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 6. Otherwise substantially degrade water quality.						
Alt. A						No other issues were identified as having the potential to substantially degrade water quality.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

11. LAND USE AND PLANNING

Changes in Management under Alternative G Affecting Land Use and Planning

Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential effects on land use or planning.

Impact 1. ***Physically divide of an established community or a conflict with any applicable habitat or community conservation plans*****. (No Impact)**

There are no substantial differences between any of the alternatives with regard to this potential impact. Alternative G will have no impact.

Mitigation: None required.

Impact 2. ***Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect*****. (Less than Significant)**

Alternative G is similar to Alternative C1 with regard to land use and would have a less than significant effect.

Mitigation: None required.

Impact 3. ***Would implementation of the Management Plan result in adverse cumulative impacts to adjacent landowners in the form of reduced enjoyment in the use of their property or a loss of property values*****. (Less than Significant)**

Alternative G is similar to Alternative C1 with regard to impacts on adjacent landowners and would have a less than significant cumulative effect.

Mitigation: None required.

Table III.15. Comparison of Land Use Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1. Physically divide of an established community or a conflict with any applicable habitat or community conservation plans.						
Alt. A						The JDSF is within a rural, resource setting with several public access roads running through the site. None of the alternatives would result in the physical division of a community. No habitat or community conservation plans are applicable to JDSF.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 2. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect.						
Alt A						Given the minimal level of management activity under this alternative, there will be no impact.
Alt. B						Timber operations on TPZ are statutorily deemed to not be a nuisance. Complies with Forest Practice Rule requirements for notifying neighbors within 300 feet of proposed harvesting operations.
Alt. C1 May 2002 DFMP						Timber operations on TPZ are statutorily deemed to not be a nuisance. These alternatives require a consistent 200-foot neighbor buffer, as mapped, with limited silvicultural treatment options when the adjacent parcel is residential.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						Timber operations on TPZ are statutorily deemed to not be a nuisance. This alternative prohibits harvesting adjacent to non-timberland neighbors.
Alt. F						Timber operations on TPZ are statutorily deemed to not be a nuisance. Limits potential impacts on neighbors by minimizing the amount of even-aged management.
Alt. G						Same as Alternative C1.

Table III.15. Comparison of Land Use Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 3. Would implementation of the Management Plan result in adverse cumulative impacts to adjacent landowners in the form of reduced enjoyment in the use of their property or a loss of property values.						
Alt A						Given the minimal level of management activity under this alternative, the cumulative impact will be less than significant.
Alt. B						While timber operations on TPZ are statutorily deemed to not be a nuisance, this alternative makes greater use of intensive evenaged harvest prescriptions than any of the other alternatives while providing no neighbor buffers. Repeated intensive harvests adjacent to non-timberland ownerships could impact the adjacent landowner's enjoyment of his/her property and reduce land values. This impact could be mitigated to less than significant through the use of a 200-foot neighbor buffer.
Alt. C1 May 2002 DFMP						Timber operations on TPZ are statutorily deemed to not be a nuisance. These alternatives require a consistent 200-foot neighbor buffer, as mapped, with limited silvicultural treatment options when the adjacent parcel is residential.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						Timber operations on TPZ are statutorily deemed to not be a nuisance. This alternative prohibits harvesting adjacent to non-timberland neighbors.
Alt. F						Timber operations on TPZ are statutorily deemed to not be a nuisance. Limits potential impacts on neighbors by minimizing the amount of even-aged management.
Alt. G						Same as Alternative C1.

12. NOISE

Changes in Management under Alternative G Affecting Noise

Management of JDSF under Alternative G will differ somewhat from management under Alternative C1 (May 2002 DFMP) as it relates to Noise. For example, Alternative G reduces average annual timber harvest by about a third, to about 20 million board feet pre year from 31 million board feet per year under Alternative C1. Since timber harvesting is a major source of noise on the Forest, this reduction is significant. Other changes, derived from mitigations under Alternative C1, are described below.

Mitigations from Alternative C1 – Mitigations to address noise impacts for Alternative C1 were developed in the 2005 DEIR and have been fully incorporated into Alternative G as management measures. These measures are:

Measure 1

While timber operations are generally limited to daylight hours when many people are away from home, logging adjacent to rural residential homes and neighborhoods will generate noise. Noise will be mitigated on a site-specific basis, taking into account the nature of the area and the inhabitants, or receptors. Options to reduce noise impacts might include limiting operations to weekdays, keeping landings and heavy equipment as far away from receptors as feasible, and where necessary, utilizing methods and machinery that are less noisy.

Measure 2

Active timber operations within the vicinity of occupied campgrounds and picnic areas will be limited to weekdays and non-holidays. Noise abatement mitigation will be included in any timber sale within 100 feet of an open campground or within 200 feet of a residence, park, or other identified sensitive receptor. Camp hosts will be kept informed of activities associated with timber operations affecting campgrounds under their jurisdiction.

Noise impacts on wildlife can be mitigated by avoiding nesting/breeding areas of noise-sensitive listed species during the critical reproductive and young-rearing months. JDSF will conduct area-wide wildlife surveys in viable habitats for listed species for one or more years prior to commencement of operations wherever timber operations are proposed. The data will be incorporated with other known locations of wildlife, both on and off the property, helping staff design operations for minimal impact to sensitive and listed species on the Jackson Demonstration State Forest.

Measure 3

Any proposed helicopter logging will use the Mendocino General Plan standards for residential dwellings in rural suburban communities as a guide in estimating noise impacts of specific timber harvest operations. Potential noise levels can

generally be determined by considering the equipment used, time of use, terrain, and distance to sensitive receptors.

The following helicopter flight characteristics will be considered in the design of timber management operations to further mitigate noise impacts within and adjacent to JDSF where sensitive receptors are identified:

- Buffer helicopter pads by using ridges or other solid sound attenuating landscape features where available and practical.
- Design helicopter flight paths to provide buffering distance from hiking trails, campgrounds, and nest sites of listed species.
- Where practical, design helicopter flight paths using terrain features that would reduce noise reception by sensitive receptors (i.e. fly behind ridges).
- Limit times of day for helicopter use to reduce impacts when operating near residential neighborhoods and occupied campgrounds.
- Logging operations will increase ambient noise levels near an active timber harvest; however, given the temporary, remote and seasonal nature of timber harvest, the above mitigation measures will reduce noise impacts to a less than significant level.

Additional helicopter measures new to Alternative G:

- Active operations will be limited to weekdays and non-holidays.
- Noise abatement will be included in a THP within 1000’ of an open campground or 200’ of a residence, part or other identified sensitive receptor.
- Camp-hosts will be informed of timber operations affecting campgrounds under their jurisdiction.
- In addition, noise impacts on nest sites of listed species and neighbors will be considered in decisions to prescribe helicopter use in logging operations.

Measure 4

Noise-generating management activities will be assessed for cumulative noise effects, and JDSF will incorporate mitigation measures to minimize them. Examples of mitigation that can be applied to projects include alteration of project methods, timing, location, scope, and duration. Trees have potential to buffer

ambient (chronic) highway and residential noise, and site-specific retention should be considered to reduce potential impacts to residents or recreationalists.

Target shooting and chainsaws (firewood cutting) are generally the noisiest recreational activities, with potential individual and cumulative noise impact that may not be mitigated by distance. JDSF controls firewood cutting through the use of permits, so firewood collection locations can be controlled. Recreational shooting is not a controlled activity on the State Forest, although it is prohibited in specified areas around Mendocino Woodlands and the Parlin Fork and Chamberlain Creek Conservation Camps. For harvesting and construction activities, mitigating noise to a level that is less than significant is accomplished by limiting days and hours of operation, as well as providing buffering distance, taking advantage of topographic features, and time between noise-creating activity and nearby sensitive receptors, and using equipment that makes less noise.

Individual Impacts

Impact 1. *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies*. (Less than Significant)

In the 2005 DEIR, a mitigation was developed for Alternative C1 to ensure that noise impacts would not occur. That mitigation has been adopted as Measure 1 (see above) as part of the Alternative G. Based on the analysis in the 2005 DEIR and the similarity between Alternative G and the mitigated Alternative C1, neither Alternative G nor any of the other seven alternatives will generate noise levels sufficient to cause a significant impact.

Mitigation: No additional mitigation required.

Impact 2. *Exposure of persons to or generate excessive ground-borne vibration or ground-borne noise levels*. (No Impact)

Alternative G is the same as C1 with respect to the potential for this impact. Based on the analysis in the 2005 DEIR, none of the alternatives will subject persons to excessive vibration or ground-borne noise. Alternative G will have no impact.

Mitigation: None required.

Impact 3. ***A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project*****. (No Impact)**

Alternative G is the same as C1 with respect to the potential for this impact. Based on the analysis in the 2005 DEIR, none of the alternatives will result in permanent noise increases. Alternative G will have no impact.

Mitigation: None required.

Impact 4. ***A substantial temporary increase in ambient noise levels in the project vicinity above levels existing without the project*****. (Less than Significant)**

The 2005 DEIR developed mitigations for Alternative C1 to ensure that temporary noise impacts would be less than significant. Those mitigations have been adopted as Measures 2 and 3 (see above) as part of Alternative G. Based on the analysis in the 2005 DEIR and the similarity between Alternative G and the mitigated Alternative C1, neither Alternative G nor any of the other seven alternatives will generate noise levels sufficient to cause a significant impact.

Mitigation: None required.

Impact 5. ***For a project located within two miles of an airport (or within an airport land use planning area) or a private airstrip, the project would expose people residing or working in the project area to excessive noise levels*****. (No Impact)**

The project is not within an airport land use planning area, or within two miles of a public airport or private airstrip. Alternative G will have no impact.

Mitigation: None required.

Impact 6. ***A temporary or permanent accumulation of noise over space and time from two or more sources resulting in an impact on sensitive human receptors*****. (Less than Significant)**

The 2005 DEIR provided specific measures for Alternative C1 to lessen or avoid individual noise impacts; however, sources can combine to create a significant cumulative effect. Thus, the 2005 DEIR developed a mitigation for Alternative C1 to reduce this cumulative impact potential to less than significant. Alternative G has adopted this mitigation as Measure 4 (see above). Based on the analysis in the 2005 DEIR and the similarity between Alternative G and the mitigated Alternative C1, neither Alternative G nor any of the other seven alternatives would cause a significant impact.

Mitigation: None required.

Table III.16. Comparison of Potential Noise Related Impacts by Alternatives.

Alternatives						Discussion
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.						
Alt. A		■				All activities are consistent with the policies of the General Plan, which provides specific allowances for timber operations. Although the analysis finds there would be no significant impact for any of the alternatives, a mitigation was developed to reduce potential noise impacts through mitigation on a site-specific basis, taking into account the nature of the area and the inhabitants, or receptors.
Alt. B			■			
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			A mitigation measure for Alternative C1 from the 2005 DEIR has been incorporated into Alternative G as a management measure.
Impact 2. Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels.						
Alt. A		■				Substantial ground-borne noise typically results from blasting or pile driving. None of the alternatives would involve these or other ground-borne activities. However, if quarry development or expansion were proposed in the future, the impacts would be addressed separately under CEQA, in compliance with the State Reclamation and Mining Act. The permitting agency in this case is County of Mendocino Planning Dept.
Alt. B		■				
Alt. C1 May 2002 DFMP		■				
Alt. C2 Nov. 2002 Plan		■				
Alt. D		■				
Alt. E		■				
Alt. F		■				
Alt. G		■				

Table III.16. Comparison of Potential Noise Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 3. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.						
Alt. A		■				All noise resulting from the project is temporary. None of the alternatives would result in permanent noise increase.
Alt. B		■				
Alt. C1 May 2002 DFMP		■				
Alt. C2 Nov. 2002 Plan		■				
Alt. D		■				
Alt. E		■				
Alt. F		■				
Alt. G		■				
Impact 4. A substantial temporary increase in ambient noise levels in the project vicinity above levels existing without the project.						
Alt. A		■				This alternative would result in no logging-related noise. It would result in no active management regarding shooting and OHVs.
Alt. B				■		These alternatives will have some logging activities to varying intensities and frequencies, which will result in noise impacts. The noise impacts in all cases are less than significant given the mitigation measures specified.
Alt. C1 May 2002 DFMP				■		
Alt. C2 Nov. 2002 Plan				■		
Alt. D				■		
Alt. E				■		
Alt. F				■		
Alt. G			■			Mitigation measures for Alternative C1 from the 2005 DEIR have been incorporated into Alternative G as management measures.

Table III.16. Comparison of Potential Noise Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 5. For a project located within two miles of an airport (or within an airport land use planning area) or a private airstrip, the project would expose people residing or working in the project area to excessive noise levels.						
Alt. A		■				The project is not within an airport land use planning area, or within two miles of a public airport or private airstrip.
Alt. B		■				
Alt. C1 May 2002 DFMP		■				
Alt. C2 Nov. 2002 Plan		■				
Alt. D		■				
Alt. E		■				
Alt. F		■				
Alt. G		■				
Impact 6. A temporary or permanent accumulation of noise over space and time from two or more sources resulting in an impact on sensitive human receptors.						
Alt. A			■			The minimal level of management activity under this alternative does not have the potential to result in significant cumulative noise impacts.
Alt. B				■		These alternatives will have some logging activities to varying intensities and frequencies, which will result in noise impacts and have some potential to result in a significant cumulative impact across multiple sources, time, and space. The noise impacts in all cases will be less than significant given the mitigation measures specified.
Alt. C1 May 2002 DFMP				■		
Alt. C2 Nov. 2002 Plan				■		
Alt. D				■		
Alt. E				■		
Alt. F				■		
Alt. G			■			A mitigation measure for Alternative C1 from the 2005 DEIR has been incorporated into Alternative G as a management measure.

13. PUBLIC SERVICES, POPULATION AND HOUSING, UTILITIES, AND SERVICE SYSTEMS

Alternative G is similar to Alternative C1 for this impact area. Alternative G will have no impact, individual or cumulative, on Pubic Services, Population and Housing, and Utilities and Service Systems. Based on the discussion in the 2005 DEIR, no thresholds of significance will be met or exceeded by Alternative G or by any of the identified project alternatives. Further analysis is not warranted.

Mitigation: None required

14. RECREATION

Changes in Management under Alternative G Affecting Recreation Resources

Management of JDSF under Alternative G will differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to recreation resources. Those changes, in goals and objectives and management direction, are described below.

Changes to Alternative C1 Goals and Objectives

Alternative G makes several changes to the Goals and Objectives under Alternative C1 (2002 DFMP) that further protect or enhance recreation resources. These include:

Forest Restoration is moved to Goal #2 and is modified to read:

> Work towards ~~achieving a balanced mix of forest structures and attributes in order to enhance~~ <u>active restoration by managing the Forest to promote and enhance</u> forest health and productivity.

The following Objectives are added to Goal #2 that will foster recreation opportunities:

> <u>Increase the amount of older forest structure and late seral forest available for terrestrial wildlife, including areas adjacent to aquatic habitats.</u>
>
> <u>Restore conifer forests where early successional hardwoods or invasive plants have become established at densities far above those typical of the mature conifer forests dominated by redwoods, Douglas-fir, Grand fir, and hemlock.</u>

Timber Management is moved from Goal #2 to Goal #4 and modified to read:

> Manage the forest on the sustained yield principle, defined as management which will achieve continuous high yields of timber production that contribute to local employment and tax revenue, consistent with environmental constraints related to watershed, wildlife, fisheries, and aesthetic and recreational enjoyment and constraints related to providing diverse, dynamic matrix of forest habitats and seral stages for researchers.

Goal #5, Recreation and Aesthetic Enjoyment, is modified to reflect additional involvement of recreation user groups:

> Plan for and provide enhanced levels of low impact recreational opportunities that are compatible with forest management objectives and healthy ecological processes, that are consistent with historic recreational use characteristics, and that allow for engagement of recreation user groups.

The following Objectives are added to Goal #5:

> Extend existing trials to create a more extensive trail system, including linkages with neighboring State Parks.
>
> Engage various recreation user groups interested in cooperating in the design, implementation, and stewardship of a more extensive recreational facilities system.

Goal #6 Information, Planning, & Staffing is modified to encourage public participation in forest management:

> Develop, maintain, and update management plans and other planning documents and processes ~~and keep them current~~. Manage and support the information needs and staffing needs of all State Forest programs. Communicate with the public regarding management of the Forest.

The following Objectives were added to Goal #6:

> Provide regular information to the local community regarding educational and recreational opportunities on the Forest, as well as research, demonstration, and management activities in general.
>
> Provide opportunities for public and other agency input into planning processes, including any advisory groups that CDF or the Board may establish.

Changes in Specific Management Actions

Alternative G has adopted various changes in management and incorporated numerous mitigation measures that provide increases in recreational opportunities within JDSF. These include:

Older Forest Structure Zone - Alternative G adds a contiguous Older Forest Structure Zone area of 6,803 acres, extending across the Forest from west to east and north to south (see Map Figure 1). Some of the Forest's most important recreational facilities—trials, campgrounds, old growth groves, are contained within this area. Management of the Older Forest Structure zone for the development and maintenance of older forest structure will provide increased recreational opportunities.

Late Seral Habitat - The area devoted to development of late-seral forest habitat has been increased by 1,549 acres under Alternative G. Specifically, the area of upper Russian Gulch and lower Big River adjacent to two State Parks has been changed from forms of uneven-aged management to late-seral development, specifically intended to recruit habitat for the marbled murrelet. This change represents a significant increase in the level of environmental protection and habitat enhancement for threatened and endangered species commonly associated with older redwood forest and will further enhance enjoyment of the forest by visitors.

Even-aged Management - Alternative G reduces the potential extent of even-aged management from 29 percent (2002 DFMP Table 6) to 26 percent (Table II.2), as well as the rate at which even-aged management may be conducted (see footnote to Table II.2). This change is likely to represent a small to modest increase in environmental protection, due to the fact that even-aged management may produce a greater impact upon both watershed resources and forest vegetation than uneven-aged management. An increase in forms of uneven-aged management will also tend to provide greater connectivity between forested habitats, and a general increase in recreational opportunity.

Initial Implementation Period Harvest Limitations - Special harvest limitations have been established, and are expected to remain in place for up to a three-year initial implementation period, while advisory entities consider JDSF management and make recommendations to the Department and the Board for possible modifications of the management plan. The interim harvest standards generally maintain or reduce the level of proposed harvest, when compared to the harvest prescriptions that were designated under Alternative C1. The intent of the interim standards is to avoid changes within individual harvest areas that will preclude future management options. The interim standards limit harvest intensity by setting targets for basal area retention and average stem size. Post-harvest conifer stocking (basal area) levels will be approximately 70 percent of pre-harvest levels, and average tree size as determined by quadratic mean stem diameter will be approximately equal to or greater than pre-harvest levels. This equates to a relatively light stand thinning or selection harvest. These interim measures will minimize impacts to recreation during the up to three-year review of the Plan.

Rate of Harvest – The management of JDSF according to the provisions set out in Alternative G is expected to reduce average annual harvest from 31 million board feet per year under Alternative C1 to approximately 20 million board feet per year during the term of the management plan. A reduction in annual harvest may contribute to a reduction in the level of habitat modification and visual disturbance, and thus result in consequent beneficial impacts to recreation.

Buffers - Additional roads and trails will be visually protected by Alternative G, through provision for a buffer, which will improve aesthetics associated with adjacent timber operations. This change represents an increase in environmental protection for recreation values when compared to Alternative C1.

The Late Seral Development Areas, Older Forest Structure Zone, and old-growth grove reserves will receive special silvicultural management zone buffers when THPs are adjacent. No even-aged silvicultural systems may be used within 300 feet, and only single tree/cluster selection or thinning may be used within the first 100 feet adjacent to these areas.

Advisory Bodies – Provisions have been established under Alternative G for the utilization of advisory entity to consider the management of the Forest and to advise the Department and the Board concerning the long-term management of JDSF. These entities will likely consider the effects of forest management activities on recreation.

Mitigations from Alternatives C1 – A mitigation developed for Alternative C1 in the 2005 DEIR to address impacts to recreation has been fully incorporated into Alternative G as a management measure:

> For public safety, post and maintain signs around all areas closed to public access for timber operations that includes information defining the period of closure. In order to avoid conflicts between recreation uses and for public safety, post and maintain appropriate signs around all areas closed to hunting, trapping, and the use of firearms. Signs should be posted at all points where roads and trails enter such areas and, in the case of hunting restrictions, at legally required intervals along the perimeter of such areas.

Individual Impacts

Impact 1. *The recreation programs outlined in the DFMP are not consistent with State or local recreation policies*. (No Impact)

Alternative G will provide somewhat greater recreation benefits than Alternative C1. Based on the analysis in the 2005 DEIR and its similarity to C1, Alternative G will not have any adverse impact on existing state or local recreation policies.

Mitigation: None required.

Impact 2a. *Existing use of the JDSF roads and trails for recreation would be substantially reduced or eliminated if roads and trails are not maintained, if roads and trails are abandoned, or if sanctioned trails are not reconstructed after a timber harvest operation*. (Less than Significant)

Implementation of Alternative G would be similar to Alternatives C1 through D in regard to road maintenance and trail reconstruction. Based on this similarity and the analysis in the 2005 DEIR, Alternative G would have a less than significant impact.

Mitigation: None required.

Impact 2b: *Cumulatively over time, use of the JDSF roads and trails for recreation would be substantially reduced or eliminated if roads and trails are not maintained, if roads and trails are abandoned, or sanctioned trails are not reconstructed after a timber harvest operation.* (Less than Significant)

Alternative G is similar to Alternatives C1 through F in its measures for road and trail management. Based on this similarity and the analysis in the 2005 DEIR, Alternative G would have a less than significant cumulative effect on road and trail use by recreationists.

Mitigation: None required.

Impact 3: *A lack of public information jeopardizes the public's health and safety*. (Less than Significant)

In the 2005 DEIR, an identified potential public health and safety risks to recreational users of JDSF was identified associated with Alternative C1. The 2005 DEIR developed a mitigation to address this issue, and Alternative G has incorporated this mitigation as a management measure (see above). Alternative G would have a less-than-significant impact.

Mitigation: None required.

Impact 4: *The DFMP precludes some year-round motorized access throughout the JDSF and, hence, recreation opportunities such as hunting*. (Beneficial Effect)

With similar road management policies to Alternative C1, Alternative G would have a beneficial effect on recreation associated with the surfacing of high use roads, increasing their usability during wet periods.

Mitigation: None required.

Impact 5: *The DFMP does not provide specific opportunities for recreational target shooting.* (No Impact)

Neither Alternative G, nor any of the other alternatives, proposes the establishment of specific target shooting areas. Therefore, no change in conditions exists and no potential impacts are identified.

Mitigation: None required.

Impact 6: *The DFMP will create individual or cumulative impacts associated with construction and use of new or expanded recreational improvements*. (Less than Significant)

Alternative G will not differ in any significant way from Alternative C1. The analysis in the 2005 DEIR indicates that these cumulative impacts would be less than significant. Alternative G would have a less-than-significant impact.

Mitigation: None required.

Table III.17. Comparison of Recreation Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1. The recreation programs outlined in the DFMP are not consistent with State or local recreation policies.						
Alt. A						The Tahoe Pacific/Farms & Forests State Heritage Corridor along Highway 20 or other trail routes identified in the Coastal Element of the Mendocino County General Plan are noted here. However, these are general, conceptual proposals at this time, and no proposals within the DFMP would preclude implementation of these concepts, nor would any of the other alternatives.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						
Impact 2a. Existing use of the JDSF roads and trails for recreation would be substantially reduced or eliminated if roads and trails are not maintained, if roads and trails are abandoned, or if sanctioned trails are not reconstructed after a timber harvest operation.						
Alt. A						No Road Management Plan in place and no decommissioning of roads planned. Roads could face increased closure due to lack of maintenance.
Alt. B						No Road Management Plan in place. Some roads could be decommissioned and new roads constructed in the course of timber operations.
Alt. C1 May 2002 DFMP						Road decommissioning would involve between 50 and 100 miles of roads, or between 10% and 20% of the roads within the JDSF. Abandonment of roads in riparian areas will specifically involve a goal of retaining or relocating affected trail routes.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						Similar to alternatives C1-E; though this alternative puts a higher priority on implementing the Road Management Plan and achieving its goals over a shorter period of time.
Alt. G						Similar to Alternatives C1 through E.

Table III.17. Comparison of Recreation Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant–Mitigation Not Feasible**
Impact 2b: Cumulatively over time, use of the JDSF roads and trails for recreation would be substantially reduced or eliminated if roads and trails are not maintained, if roads and trails are abandoned, or sanctioned trails are not reconstructed after a timber harvest operation.						
Alt. A						No Road Management Plan in place and no decommissioning of roads planned. Roads, trails, and campsites could face increased increasing levels of closure due to lack of maintenance, eventually resulting in a significant reduction in recreation opportunities. Impacts could be mitigated to less than significant by increasing the level of maintenance of these facilities.
Alt. B						No Road Management Plan in place. Some roads could be decommissioned and other new roads could be constructed in the course of timber operations. Similar levels of trails as are available today would be maintained over time.
Alt. C1 May 2002 DFMP						Road decommissioning would involve between 50 and 100 miles of roads, or between 10% and 20% of the roads within the JDSF. Abandonment of roads in riparian areas will specifically involve a goal of retaining or relocating affected trail routes.
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

Table III.17. Comparison of Recreation Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant After Mitigation (5) Significant–Mitigation Not Feasible**
Impact 3. A lack of public information jeopardizes the public's health and safety.						
Alt. A				■		These alternatives involve minimal to modest levels of recreation management. Potential impacts to public health and safety can be mitigated by the installation and maintenance of signs at road and trail entrances to timber harvest areas where called for in the alternatives and around all areas excluded from hunting.
Alt. B				■		
Alt. C1 May 2002 DFMP				■		
Alt. C2 Nov. 2002 Plan			■			These alternatives involve modest levels of recreation management. They protect public health and safety by calling for the installation and maintenance of signs at road and trail entrances to timber harvest areas and around all areas excluded from hunting.
Alt. D			■			
Alt. E				■		These alternatives involve modest levels of recreation management. Potential impacts to public health and safety can be mitigated by the installation and maintenance of signs at road and trail entrances to timber harvest areas where called for in the alternatives and around all areas excluded from hunting.
Alt. F				■		
Alt. G			■			Incorporation of an Alternative C1 mitigation from the 2005 DEIR into Alternative G as a management measure has reduced the impact to less than significant.

Table III.17. Comparison of Recreation Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 4: The DFMP precludes some year-round motorized access throughout the JDSF and, hence, recreation opportunities such as hunting.						
Alt. A		■				State Forest regulations prohibit cross-country travel by motorized vehicles. Motorized vehicles must utilize roads and parking areas constructed for vehicle use, and not utilize roads that are gated, shut, or posted as closed. Selected roads are open to non-motorized access during winter months. This is a request for additional recreational opportunities beyond those currently existing. It is not a changed condition resulting from the JDSF Management Plan. As such, no mitigation is required. Alternatives C1, C2, D, F and G propose to surface roads to improve recreation access; which would be beneficial relative to current access conditions. Alternatives A, B, and E do not propose to either worsen or improve year-round access, and therefore have no impact.
Alt. B		■				
Alt. C1 May 2002 DFMP	■					
Alt. C2 Nov. 2002 Plan	■					
Alt. D	■					
Alt. E		■				
Alt. F	■					
Alt. G	■					
Impact 5: The DFMP does not provide specific opportunities for recreational target shooting.						
Alt. A		■				Formal shooting areas or “ranges” for recreational shooters are not proposed in the DFMP due to concern regarding potential for impacts resulting from concentrated shooting activity, including noise and public safety concerns. This is a request for additional recreational opportunities beyond those currently existing. It is not a changed condition resulting from the JDSF Management Plan. As such, there is no impact and no mitigation is required.
Alt. B		■				
Alt. C1 May 2002 DFMP		■				
Alt. C2 Nov. 2002 Plan		■				
Alt. D		■				
Alt. E		■				
Alt. F		■				
Alt. G		■				

Table III.17. Comparison of Recreation Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 6: The DFMP will create individual or cumulative impacts associated with construction and use of new or expanded recreational improvements.						
Alt. A						Modest improvements possible after completion of a user-needs survey. Any future improvements to remain rustic in character. Environmental improvements to existing roads and facilities planned that will reduce present level of impact. After completion of user-needs survey, conduct tiered environmental assessment of plans for new or improved recreational facilities. Adverse cumulative impacts will be less than significant due to improvements in existing roads and facilities, periodic user surveys to better identify recreation needs, and conduct of additional environmental assessment, tiered to this EIR or a subsequent programmatic CEQA document, for new or substantially improved recreational facilities.
Alt. B						
Alt. C1 May 2002 DFMP						
Alt. C2 Nov. 2002 Plan						
Alt. D						
Alt. E						
Alt. F						
Alt. G						

15. TRANSPORTATION AND TRAFFIC

Changes in Management under Alternative G Relating to Transportation and Traffic

Management of JDSF under Alternative G will not differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts from traffic and transportation. There will be some reduction in traffic related to logging since Alernative G proposes an annual average harvest of about 20 million board feet of timber, as compared to 31 million under Alternative C1.

Individual Impacts and Cumulative Impacts

Impact 1: ***An increase in traffic, which is substantial in relation to existing traffic load and capacity of the street system.*** **(Less than Significant)**

Traffic related to logging will decrease under Alternative G as compared with Alternative C1. Based on this comparison and the analysis in the 2005 DEIR, Alternative G will have a less than significant impact.

Mitigation: None Required

Impact 2: ***Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways*****. (Less than Significant)**

Established level of service standards will not be exceeded under Alternative G nor under any of the other alternatives. Traffic related to logging will decrease under Alternative G as compared with Alternative C1. Based on this comparison and the analysis in the 2005 DEIR, Alternative G will have a less than significant impact.

Mitigation: None Required

Impact 3: ***Cause a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks*****. (No Impact)**

The nearest airport is 2.5 miles away and management of JDSF for timber and related resources has no effect on air traffic levels or safety. Alternative G would have no impact.

Impact 4: ***Would the project cause a substantial increase in hazards due to design feature?*** **(Less than Significant)**

Alternative G as will not change in any substantial way as compared with Alternative C1. Based on this similarity and the analysis in the 2005 DEIR, Alternative G would have a less-than-significant impact.

Mitigation: None Required

Impact 5: ***Would the project significantly affect parking capacity?*** **(Less than Significant)**

Parking needs will not change under Alternative G as compared with Alternative C1. Based on this similarity and the analysis in the 2005 DEIR, Alternative G would have a less-than-significant impact.

Mitigation: None Required

Impact 6: ***Conflict with adopted policies, plans, or programs supporting alternative transportation.*** **(Beneficial)**

Alternative G, as with Alternative C1, does not conflict with any policies, plans or programs related to alternative transportation. Further, the revised goals for Alternative G call for enhanced levels of low impact recreational opportunities, such as trails. Based on the similarities and differences between Alternatives C1 and G, and the analysis in the 2005 DEIR, Alternative G would have a beneficial impact.

Mitigation: None Required

Table III.18. Comparison of Traffic and Transportation Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 1: Cause and increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system.						
Alt. A		■				There would be no logging related traffic associated with this alternative. Recreational traffic is presumed to remain at current levels, with a potential increase in ORV use and unauthorized camping.
Alt. B			■			There is no substantial difference among the active management alternatives. Each would result in some level of logging and recreation traffic to varying degrees that would remain well below the significance thresholds.
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			
Impact 2: Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.						
Alt. A		■				There would be no logging related traffic associated with this alternative. Recreational traffic is presumed to remain at current levels, with a potential increase in ORV use and unauthorized camping.
Alt. B			■			Mendocino County is considered rural and has no Congestion Management Agency. There is no substantial difference among the active management alternatives. Each would result in some level of logging and recreational traffic to varying degrees that would remain below the significance thresholds.
Alt. C2 Nov. 2002 Plan			■			
Alt. C2 Nov. FFMP			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			

Table III.18. Comparison of Traffic and Transportation Related Impacts by Alternatives.						
Alternatives						**Discussion**
Impact*	**1**	**2**	**3**	**4**	**5**	***Impact Levels: (1) Beneficial (2) No Impact (3) Less than Significant (4) Less than Significant after Mitigation (5) Significant–Mitigation Not Feasible**
Impact 5. Substantially result in inadequate parking capacity.						
Alt. A				■		In the absence of active management, unauthorized and unsafe parking could become more prevalent. Particularly along higher-speed roads. Mitigation is feasible and would consist of signing, an enforcement program, and permits for special events (similar to current management practices).
Alt. B			■			All special events that may occur within JDSF have appropriate and adequate parking and staging facilities; therefore, there will not be a significant impact on the existing facilities within the Forest. If a special event is to occur that has the potential to exceed the existing accommodations, CDF will limit the size of the proposed event, or otherwise control traffic, to ensure that adequate facilities are maintained.
Alt. C1 May 2002 DFMP			■			
Alt. C2 Nov. 2002 Plan			■			
Alt. D			■			
Alt. E			■			
Alt. F			■			
Alt. G			■			
Impact 6. Conflict with adopted policies, plans, or programs supporting alternative transportation.						
Alt. A		■				This alternative will not affect the County's plans for expanded alternative transportation.
Alt. B	■					There is no substantial difference among the active management alternatives. Each would facilitate bikeways and other trails consistent with management goals thereby resulting in a beneficial effect.
Alt. C1 May 2002 DFMP	■					
Alt. C2 Nov. 2002 Plan	■					
Alt. D	■					
Alt. E	■					
Alt. F	■					
Alt. G	■					

16. CLIMATE CHANGE AND CARBON SEQUESTRATION

Changes in Management under Alternative G related to Climate Change and Carbon Sequestration

Management of JDSF under Alternative G will differ substantially from management under Alternative C1 (May 2002 DFMP) as it relates to potential impacts to rates of carbon sequestration. Those changes, in goals and objectives and management direction, are described below.

Changes to Alternative C1 Goals and Objectives

Alternative G makes several changes to the Goals and Objectives under Alternative C1 (2002 DFMP) that may increase carbon sequestration at JDSF. These include:

> **Goal #2 – *[Goal # 4 in 2002 DFMP]* FOREST RESTORATION**: Work towards ~~achieving a balanced mix of forest structures and attributes in order to enhance~~ active restoration by managing the Forest to promote and enhance forest health and productivity.

The following Objectives are added to Goal #2 that will increase carbon sequestration opportunities:

Objectives:

Increase the amount of older forest structure and late seral forest available for terrestrial wildlife, including areas adjacent to aquatic habitats.

Improve habitat connectivity and reduce forest fragmentation, including the concepts of corridors and contiguous habitat.

Use a range of management techniques to compare natural and accelerated forest restoration approaches while maintaining high canopy cover across the whole Older Forest Structure Zone (OFSZ) and other areas designated for development of late seral forest characteristics.

Cooperate with other agencies and private conservation organizations interested in forest restoration on research into approaches to increase the pace at which older forest structure characteristics can be developed through active management.

Work with neighboring landowners, including State Parks and the Conservation Fund, to explore opportunities for multiple-landowner, landscape-level approaches to forest restoration, including the protection and enhancement of watershed and ecological processes.

Restore conifer forests where early successional hardwoods or invasive plants have become established at densities far above those typical of the mature conifer forests dominated by redwoods, Douglas-fir, Grand fir, and hemlock.

Changes in Alternative C1 Specific Management Actions

Alternative G has adopted various changes in management and incorporated numerous mitigation measures that provide increased opportunities for carbon sequestration within JDSF. These include:

Older Forest Structure Zone - Alternative G adds a contiguous Older Forest Structure Zone area of 6,803 acres, extending across the Forest from west to east and north to south (see Map Figure 1). Some of the Forest's old growth groves are contained within this area. Management of the Older Forest Structure Zone for the development and maintenance of older forest structure will provide increased carbon sequestration opportunities (Table III.19).

Late Seral Habitat - The area devoted to development of late-seral forest habitat has been increased by 1,549 acres under Alternative G. Specifically, the area of upper Russian Gulch and lower Big River adjacent to two State Parks has been changed from forms of uneven-aged management to late-seral development, specifically intended to recruit habitat for the marbled murrelet. This change represents a significant increase in the amount of late-seral forest habitat and will further enhance carbon sequestration.

Even-aged Management - Alternative G reduces the potential extent of even-aged management from 29 percent (2002 DFMP Table 6) to 26 percent Table II.2), as well as the rate at which even-aged management may be conducted. This may present a small to modest opportunity for an increase in carbon sequestration.

Rate of Harvest – The management of JDSF according to the provisions set out in Alternative G is expected to reduce average annual harvest from 31 million board feet per year under Alternative C1 to approximately 20 million board feet per year during the term of the management plan. A reduction in annual harvest to a level significantly below annual growth may result in significant increases in the amount of carbon sequestered within the Forest.

Buffers - The Late Seral Development Areas, Older Forest Structure Zone, and old-growth grove reserves will receive special silvicultural management zone buffers when THPs are adjacent. No even-aged silvicultural systems may be used within 300 feet, and only single tree/cluster selection or thinning may be used within the first 100 feet adjacent to these areas.

Advisory Bodies – Provisions have been established under Alternative G for the utilization of advisory entities to consider the management of the Forest and to advise the Department and the Board concerning the long-term management of JDSF. These entities will likely consider the effects of forest management activities on rates of carbon sequestration and climate change.

Conclusion

Changes in management direction and policy under Alternative G, as compared to Alternative C1, will result in significant increases in the rates of carbon sequestration and may have a positive effect on climate change.

Table III.19. Comparison of EIR Alternatives for Total Net Carbon Sequestered at End of 100-Year Planning Interval.

Alternative	(1) Current Standing Timber Inventory (MMBF)	(2) Above-Ground Carbon Stored in Current Standing Timber (M tons)	(3) Total Harvest Over 100-Yr. Planning Interval (MMBF)	(4) Total Estimated Carbon Sequestered in Forest Products at End of 100-Yr. Planning Period (M tons)	(5) Standing Timber Inventory at end of 100-Yr. Planning Interval (MMBF)	(6) Above-Ground Carbon Stored in Standing Timber at End of 100-Yr. Planning Interval (M tons)	(7) Total Net Carbon Sequestered at End of 100-Yr. Planning Interval (M tons) (columns 4+6-2)	(8) Net Carbon Dioxide Equivalent Sequestered at End of 100-Yr. Planning Interval (M tons) (column 7 X 3.666)
A	2,093.3	1,099.0	0	0	6,119.8	3,212.9	2,113.9	7,749.7
B	2,093.3	1,099.0	4,258.9	1,536.6	2,374.9	1,246.8	1,684.5	6,175.3
C1	2,093.3	1,099.0	3,789.4	1,369.8	2,624.2	1,377.7	1,648.5	6,043.6
C2	2,093.3	1,099.0	3,721.9	1,342.9	2,701.3	1,418.2	1,662.1	6,093.2
D	2,093.3	1,099.0	2,994.3	1,080.4	3,757.5	1,972.7	1,954.1	7,163.7
E	2,093.3	1,099.0	980.0	354.0	5,800.8	3,045.4	2,300.5	8,433.6
F	2,093.3	1,099.0	2,315.7	835.5	4,145.5	2,176.4	1,912.9	7,012.8
G	2093.3	1,099.0	2,048.6	734.5	4,476.6	2,350.2	1,985.7	7,279.6